EL DORADO IRRIGATION DISTRICT

Cost of Service Study 2023

Report

December 2023

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1. Executive Summary Purpose

1.1 Background

In 2012, the El Dorado Irrigation District (District) prepared a comprehensive Cost-of-Service (COS) study of the District's water, wastewater, recycled water, and agricultural/raw water rates. That study was partially updated in 2020 when new rates were adopted, although not all aspects of the cost-of-service analysis were reviewed in-depth. This report documents the District's efforts to provide a comprehensive update of the 2012 rate study, an effort that began in March of 2023.

As in the original 2012 rate study, this study is part of the District's overall commitment to: (1) provide reliable, high quality, and safe water, wastewater, recycled water, hydro-generation, and recreation services, (2) operate the District in a fiscally responsible manner, particularly in light of the challenges presented by the District's complex and unique infrastructure, and (3) comply with state and federal laws, most notably Proposition 218 (Prop 218).

One of several key factors addressed in this rate study was the development of new financial plans to best manage the District's $321 million of planned capital improvement projects over the next five years. This includes issuing new debt for large, long-lived capital replacement projects in the water system of approximately $60 million in 2024 and $120 million in 2027, and generating annual revenue from rates to fund other projects on pay-as-you-go basis.

Other key issues included: (1) the overall fairness and equity of rates, (2) whether improvements should be made to the District's rate structures, and (3) whether any customer classes should be adjusted.

Additionally, the Board discussed the principal objectives of the rate study as a part of its guidance to District staff and had general consent on important aspects of the study. In no particular order of priority, the key objectives included affordability, infrastructure reliability, and revenue stability. Other objectives discussed included the continuity of rate design and water conservation.[1]

This updated study and report are the result of a significant effort by District staff to review capital improvement plans and various operational components of the District's potable water, wastewater, recycled water, and agricultural/raw water systems. Additionally, the District Board provided key policy direction throughout the process, including five public workshops[2] during which District customers were also able to provide input.

1.2 Key Findings

During this rate study, the District Board expressed an interest in evaluating various changes to the District's rate structure that would simplify and/or improve the overall equity of the rates. Some of the potential changes included: (1) combining customer classes where that makes sense from a customer equity perspective, (2) eliminating base charges for meter sizes in which there are no customers, and (3) using the same base charges for the common meter sizes (e.g., all one-inch meters would have the same base charge regardless of customer class).

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[1] *See documentation related to the June 12, 2023 Board's Cost of Service Analysis Workshop.*
[2] *Workshops conducted on June 12, August 14, October 10, November 13, and November 16, 2023.*

After review by District staff and NBS, the following modifications are recommended.

- Potable Water Base Charges – Recreational Turf customers are now combined with the Multi-Family Residential and Commercial/Industrial customer classes.
- Wastewater Commercial Customer Classes – The existing five classes (low, medium/low, medium, medium/high, and high strength) are now reduced to three classes (low, medium, and medium/high).
- Recycled Water Volumetric Rates – Recreational Turf, Commercial Landscape, and Dual-Plumbed customers now have the same uniform volumetric rate.[3]

Other than these changes, the District should continue using base charges that (1) increase by meter size, (2) differ by customer class, and (3) include base charges for all meter sizes, even those that currently have no accounts, for the purpose of accommodating new customers that may be added in the future.

Agricultural/Raw Water Rates – District engineering staff performed a detailed cost allocation analysis of system assets that are used for agricultural irrigation purposes vs. potable water system purposes. This was the same type of analysis performed in the 2012 rate study and evaluated the specific non-potable system costs that should be included in agricultural rates. This analysis reinforced the concepts that: (1) agricultural customers do not require potable water supply, and (2) other District customers benefit in cases where agricultural customers do receive potable water, such as increased water efficiency and greater water supply reliability when previously used raw water is transferred from agricultural areas to El Dorado Hills for treatment and sale.

In the 2012 rate study, this analysis concluded that approximately 2.1 percent of the value of system assets should be directly allocated to agricultural customers. The updated evaluation concluded that this direct allocation is now approximately 3.9 percent.

Summary of Average Bill Changes – The impacts of proposed rates on Single Family Residential customers with average consumption are shown in Figure 1:

Figure 1. Summary of Residential Bi-Monthly Bill Impacts

Bi-Monthly Bill Impacts ($/bi-mo.)	2024	2025	2026	2027	2028
Water (Only)	$16.81	$16.73	$18.74	$20.98	$23.50
Wastewater (Only)	$2.80	$3.40	$3.51	$3.61	$3.72
Combined Water & Wastewater	$19.61	$20.13	$22.24	$24.60	$27.22
Water, Wastewater & Recycled	$28.11	$20.29	$22.20	$24.31	$26.66
Bi-Monthly Bill Impacts (%/bi-mo.)					
Water (Only)	13.7%	12.0%	12.0%	12.0%	12.0%
Wastewater (Only)	2.5%	3.0%	3.0%	3.0%	3.0%
Combined Water & Wastewater	8.4%	8.0%	8.1%	8.3%	8.5%
Water, Wastewater & Recycled	9.7%	6.4%	6.6%	6.8%	6.9%

Please refer to Section 6, Figures 60-67 for more information on customer bill impacts and Figures 68-69 for regional bill comparisons.

[3] *Current commodity rates for Dual-Plumbed recycled water customers have three tiers.*

FREQUENTLY ASKED QUESTIONS ABOUT THE RATE STUDY

What is a Cost-of-Service (COS) study and why was it done? A COS study is a comprehensive analysis of the District's water, wastewater, and recycled water rates that addresses key factors such as fairness and equity in rates, revenue sufficiency, and adequate funding of reserves. This study updates a 2012 COS rate study and this report documents the results of this update.

How was the study conducted and who was involved? The District continues to follow the guiding principles established in the 2012 COS rate study but was also directed by the District Board to take a fresh look at several fairness and equity issues, such as rate design, customer classes as well as how to minimize rate impacts. District staff, along with NBS senior rate consultants[4], directed this study to its completion. The Board and the general public were briefed during five public workshops and the Board ultimately approved the proposed rates.

What are the benefits of conducting such a study? First and foremost, it evaluates the fairness and equity of rates among customer classes. Under the requirements of Prop 218, it is required that the District conduct such a study before it can increase rates, which is necessary to collect the appropriate revenues and cover operational costs. Water and wastewater rate models were developed as a part of the study; using and adjusting these models in the future will enable the District to maintain rates that are properly aligned to the COS methodology.

What were the results of the COS study? While there were a few modifications to the rate structure and customer classes, the study shows that the typical residential water and wastewater customer's bills would increase approximately 8.4 percent in 2024 and 8.0 to 8.5 percent in 2025 through 2028. Water-only customers will see higher increases (roughly 12 percent) while wastewater-only customers will see annual increases of approximately three percent. Customers who have water, wastewater, and recycled water services will see initial increases of about 10 percent, followed by increases of six to seven percent in 2025 through 2028. These results are for typical customers with average water consumption levels.

How and when will the recommended rate changes be implemented? The District will need to mail written notices of the proposed rate adjustments to all customers, as mandated by Prop 218, and then hold a public hearing not less than 45 days after notices are mailed. Assuming the proposed rates are not successfully challenged by a majority protest during this process, the Board may adopt and implement the new water, wastewater, and recycled water rate structures. If adopted, the new rates would be implemented January 1, 2024.

How can someone learn more about the COS study and the District's recommendations? The District's Cost-of-Services study page on the District's website (www.eid.org) provides useful information about the COS study process and the presentations and reports made to the Board on this topic.

The remainder of this report summarizes the existing rates, projected budgets, financial plans, recommended rate increases, customer bill impacts, and other actions the District should consider taking to maintain the financial health of the water, wastewater, and recycled water utilities.

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[4] *Mr. Sanjay Gaur, a Principal Consultant with Water Resource Economics, also provided senior review.*

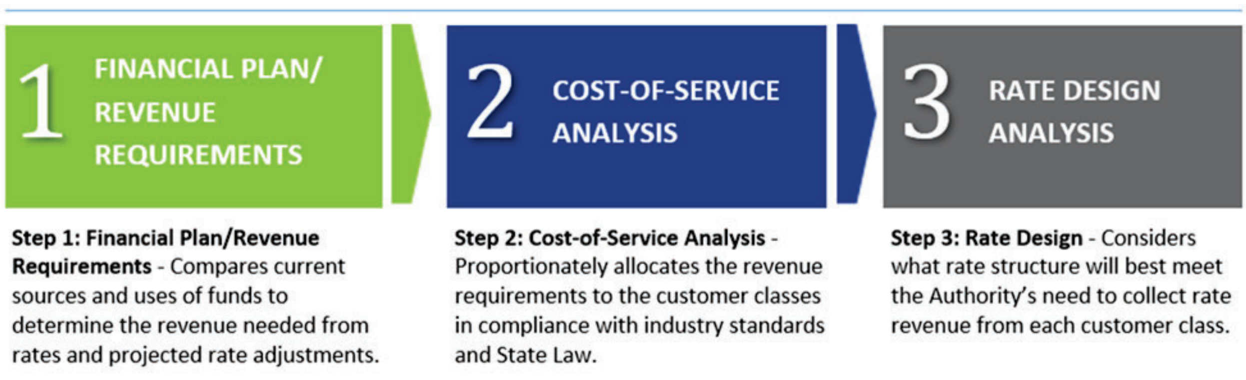
2. The Rate Study Methodology

This section provides an overview of the rate study components, the methodology used in the analysis, and the Proposition 218 requirements that must be adhered to.

2.1 Overview

The methodology in this rate study follows industry standards and reflects the fundamental principles of cost-of-service rate making embodied in the AWWA *Principles of Water Rates, Fees, and Charges*[5], also referred to as Manual M1. This publication is one of the most widely cited and referenced industry publications on rate studies. The principles presented in Manual M1 have provided the basic framework for this study and are summarized in Figure 2.

Figure 2. Components of a Comprehensive Cost-of-Service Study



The second and third components have been tailored to better fit the District's current and historical rate practices and to account for the District's unique characteristics. This is consistent with Manual M1, which states:[6]

> *"…the costs of water rates and charges should be recovered costs from classes of customers in proportion to the cost of serving those customers. However, … other considerations may be equally or more important in determining rates and charges and may better reflect emerging objectives of the utility or the community it serves."*
>
> and
>
> *"…pricing policies may support a community's social, economic, political, and environmental concerns."*

During the 2012 rate study, the Board adopted 12 guiding principles that proactively address these kinds of policies and cost-of-service principles and consider the broader interests of the District's customers. These principles are presented in Appendix A. Common rate study terminologies and abbreviations are provided in Appendix B.

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[5] *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, M1, AWWA, Seventh Edition, 2017.*

[6] *Ibid, pages xix and 79. Also see Financing and Charges for Wastewater Systems, Manual of Practice No. 27, Water Environment Federation, 2004, page 91.*

2.2 Water and Wastewater Rate Study Methodologies

The various steps used in conducting the three components shown in Figure 2 are outlined in more detail in Figure 3 for the water rate study and in Figure 4 for the wastewater rate study. The cost-of-service terminologies used in these figures, such as "functionalize costs," refer to specific steps in the analysis and are explained in more detail in Appendix C along with other cost-of-service terminology.

Figure 3. Details of the Water Rate Study Methodology

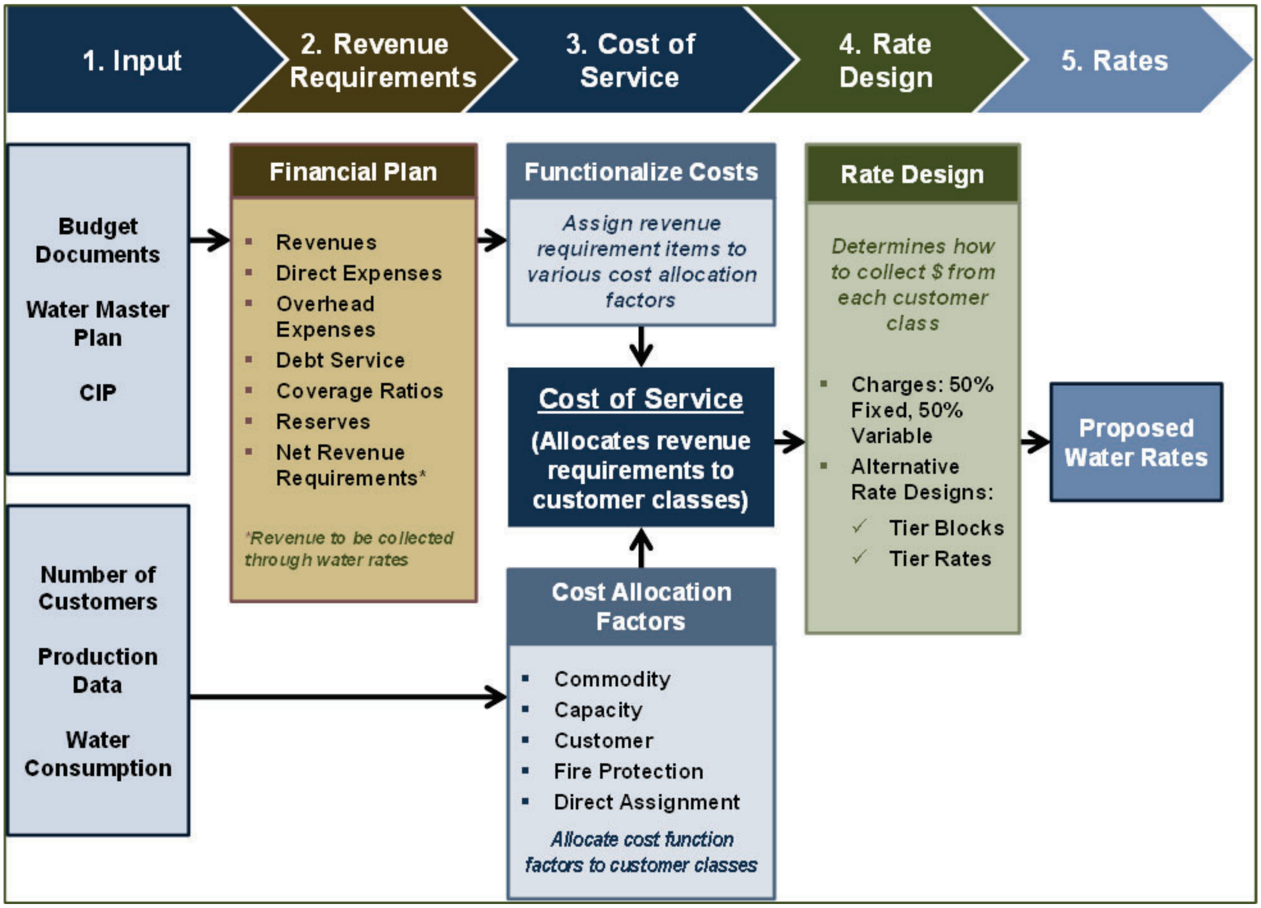
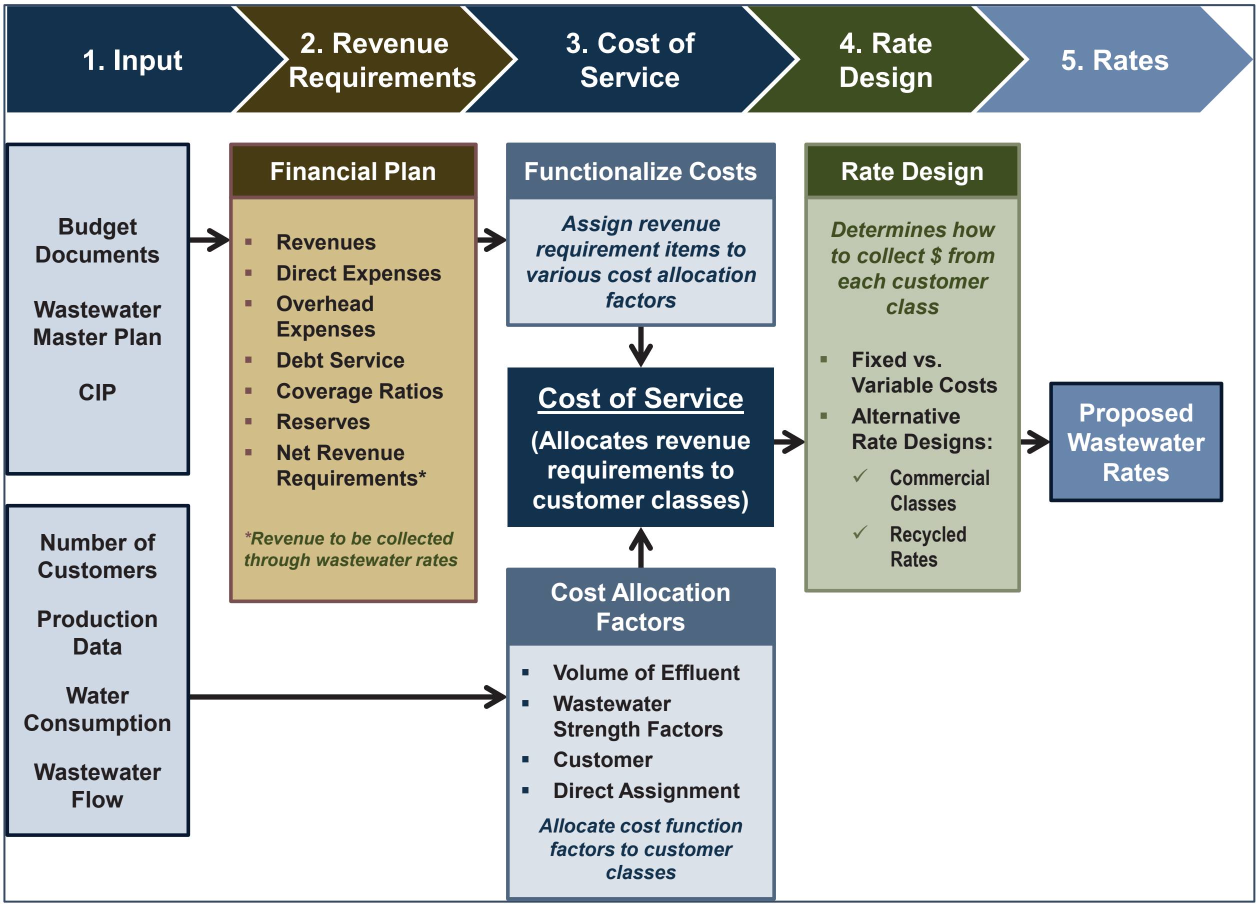


Figure 4. Details of the Wastewater Rate Study Methodology



These diagrams indicate basic procedures followed during the analysis and are embedded in the rate models, which were developed for the purpose of evaluating and calculating the water, wastewater, and recycled water rates recommended in this report.

The District staff provided the Board with an overview of this process in January 2023, at which time the Board directed staff to issue a request for proposals (RFP) to select a qualified rate consultant to assist the District in updating the previous 2012 and 2020 rate studies. In February 2023, the Board awarded a contract to NBS to fulfill this role, and the District subsequently issued a notice to proceed to NBS in March of 2023.

AGRICULTURAL AND RECYCLED WATER CLASSIFICATIONS

As noted in both Figures 3 and 4 there are costs that have a "direct assignment" cost allocation. These are costs related to customers that have certain characteristics that require special consideration in allocating costs.[7] Direct assignments (DA) of costs are particularly important if a customer class has unique service characteristics and/or uses the District's infrastructure in a unique way that should be reflected in the cost

[7] *AWWA, Ibid, p. 71, "Special Considerations".*

allocations. Industry practice is to consider charging special rates that are unique (typically less than) rates for standard service levels.

The District has two customer classes that have such DA costs: (1) agricultural and raw-water customers and (2) recycled water customers, with dual-plumbed residential homes having the largest number of accounts.

Because of the special considerations for each of these types of customers, the District has undertaken distinct measures to identify appropriate costs and rate designs. These specific measures were largely established and approved by the Board during the 2012 rate study, although the Board has recently reviewed and directed District staff to continue with these basic practices, which are specifically embedded in the *Principles for Guiding the Rate-Setting Process* included as Appendix A.

2.3 Rate Design

Basic rate design concepts largely focus on the relationship between fixed and variable costs and how those costs are collected from various types of customers. Most rate structures in California today contain a fixed or minimum charge (called Base Charges in the District's case), along with a volumetric charge (called Commodity Charges or Commodity Rates in the District's case).

FIXED CHARGES

Fixed charges are those that do not vary with the amount of water produced or the amount of wastewater handled by a wastewater system. Debt service payments are an example of a fixed cost. Collecting fixed costs from fixed charges helps ensure that a utility adequately covers its costs that cannot be deferred and do not change with the volume of water solid (i.e., fixed costs). Although fixed costs are typically a significant percentage of the utility's total costs, rarely is 100% of the fixed costs collected through fixed charges. This is primarily due to an emphasis on conservation and is reflective of State guidelines that strive to promote the efficient use of the State's water resources.

Fixed charges for water utilities typically increase by meter size. For example, a customer with a 2" meter may have a fixed meter charge that is eight times greater than the 3/4" fixed meter charge based on the meter's safe operating capacity.[8] Because a large portion of water utilities' costs are typically related to meeting capacity requirements, reflecting individual demands for capacity is an important aspect of establishing rates for customers.

The District's bi-monthly base charges for water are a combination of capacity-related costs that increase with meter size plus administrative costs (e.g., meter reading, billing, and customer service costs) that are charged on a per-account basis.

Similarly, wastewater bi-monthly fixed charges reflect costs that do not vary with the amount of wastewater customers generate and send to the treatment plant via the sanitary sewer collection system.

VARIABLE (OR VOLUMETRIC) CHARGES

In contrast to fixed costs, variable costs, by definition, change with the quantity of water produced (or wastewater collected). Examples of variable costs include the cost of purchased water supplies, electricity

[8] *American Water Works Association, Principles of Water Rates, Fees and Charges, M1 Manual, fifth edition, p. 202, and seventh edition, p. 338.*

for pumping and treatment, and chemicals. For the District's water utility, variable charges are based on metered water consumption and charged per cubic foot of consumption.

The District's variable charges for residential wastewater customers are based on their average winter water consumption, which primarily reflects indoor consumption for drinking, cooking, showers, toilets, laundry, etc., and is a reasonable proxy for the wastewater generated and discharged to the District's sanitary sewer collection system for treatment and disposal. Commercial and industrial wastewater volumetric charges are based on bi-monthly metered water consumption rather than average winter water consumption. Many commercial and industrial customers have separate water meters for outdoor irrigation; this metered irrigation usage is not included in their wastewater charges.

2.4 Proposition 218 (Prop 218) Requirements

Prop 218, which was adopted by the voters in 1996 and dubbed the "citizen's right to vote on new taxes," provides the opportunity for the public to protest changes to any new or increased "property-related fees." Following passage of Prop 218, the California Supreme Court ruled that usage-based water and wastewater rates were "property-related fees" subject to Prop 218's substantive requirements, and to its noticing and protest procedures. Even if proposed service charges are revenue-neutral (i.e., not intended to increase the overall amount of revenue collected), a change in the rate structure (e.g., from a uniform rate to a multi-tiered rate) is subject to Prop 218 mandates.

Of particular note, the San Juan Capistrano court decision[9] in 2015 established the need for water utilities to "demonstrate the cost basis" of the rates they adopt; this is a specific concern for tiered volumetric rates. In light of this decision, the District has worked closely with legal counsel in conducting a detailed review of the costs of its tiered rates so that the costs included in its tiers reflect the operating and supply costs of those tiers in compliance with these requirements.

Additionally, Prop 218 requires a utility to provide public notification of proposed rate changes, inform property owners/customers of the protest mechanism and the time frame for response, and provide a public hearing on the proposed rates. The public hearing must be held "not less than 45 days after the mailing of the notice." The District issued these notices on October 26, 2023, and will hold a public hearing on December 11, 2023.

[9] *Capistrano Taxpayers Association v. City of San Juan Capistrano, April 20, 2015.*

3. Financial Plans

This section provides an overview of the District's financial planning process, operating and capital improvement costs, and the sources and uses of water and wastewater funds.

3.1 General Financial Policy and Budget Considerations

To ensure the financial health of the District's utilities, it is important for the District to follow sound financial management practices. This includes maintaining a reasonable operating reserve, funding working capital, meeting bond coverage ratios, and maintaining a good credit rating. The District's current approach to these objectives is as follows:

- **Meeting Annual Operating and Maintenance Costs:** The District's bi-annual budget identifies the District's expenditures for operating and maintaining the water and wastewater utilities. For 2024, the District has an operating budget, not including debt service or rate-funded capital projects, of $42 million for the water utility and $23 million for the wastewater utility. The adoption and update of this budget is approved each year by the Board.
- **Maintaining Sufficient Capital Improvement Program Reserves:** With an installed asset base of $1.14 billion in historical costs[10], the District has substantial capital improvement requirements for projects to refurbish, replace, and when required, expand these assets. The District strives to maintain an appropriate balance between pay-as-you-go, or cash-funding, and funding of these projects through the issuance of debt. This balance is determined with the overall intent of minimizing rate increases and maintaining the financial health of the District.

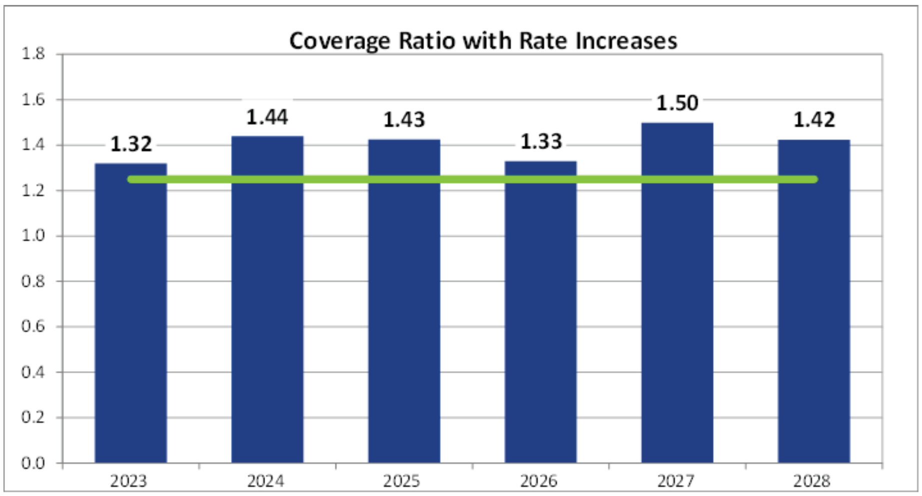
Silver Lake Replacement ($50 million)
(from EID's 2024-2028 Capital Improvement Plan)

- **Maintaining a Reasonable Operating Reserve**: The District assumes a minimum target operating reserve of 25 percent of annual O&M expenditures, or about three months of operating expenses, to handle daily cash flow requirements and emergencies. However, an additional $5 million was added to this target reserve for water and $1 million for the wastewater utility to bolster the emergency reserves and improve the District's financial outlook in anticipation of issuing new debt to fund capital projects (as further discussed below). This was one of the key recommendations by credit-rating institutions during the District's prior debt issuances.

[10]*From District records; source: Fixed Assets Summary – Fixed As.xlsx.*

- **Maintaining Adequate Debt Service Coverage Ratios:** A "coverage ratio"[11] is required as a part of the obligations incurred when a utility issues revenue bonds or similar debt instruments stating the District will fix, prescribe, and collect rates and charges to yield net revenues, after operating expenses, equal to one hundred twenty-five percent (125%) of debt service in any given fiscal year. The District is legally required to maintain a debt service coverage ratio of at least 1.25, although the District's management team would like to achieve higher coverages in light of planned new water utility debt issuances in 2024 and 2027. Since the District calculates coverage ratios on a District-wide basis (vs. separately for the water and wastewater utilities), coverage ratios are the same for both utilities. Figure 5 shows the current coverage calculations under the currently proposed financial plans for both the utilities.

Figure 5. Projected Coverage Ratios



3.2 Capital Improvement Program Expenditures

The District strives to provide reliable, high-quality water, wastewater, and recycled water services to its customers. The replacement of capital assets is a key component of providing this safe and reliable service.

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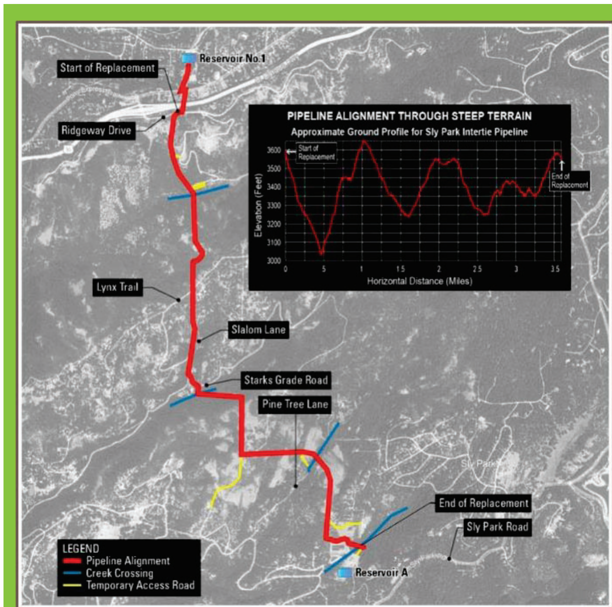
[11] A coverage ratio is net revenues, which are typically defined as gross revenues less operating expenditures, divided by annual debt service payments.



Sly Park Intertie Replacement ($30 million)
(from EID's 2024-2028 Capital Improvement Plan)

One of the most significant factors in the District's financial planning has been the need to fund the capital improvement program (CIP). Figure 6 provides an overview of the District's water system CIP expenditures from 2023 to 2028, which total $233 million.

However, these plans represent only about 75 percent of the actual planned projects; District staff have had to reduce or delay about 25 percent of the total costs to reasonably be able to fund these projects with available rate revenue and debt-funding. The District also anticipates issuing $60 million of new water system related debt in 2024 and $120 million in 2027.

Figure 7 summarizes the District's wastewater system CIP expenditures from 2023 to 2028. This $39 million is primarily for wastewater treatment and collection system projects; less than five percent are recycled water system projects.

Figure 6. Water System Capital Project Expenditures

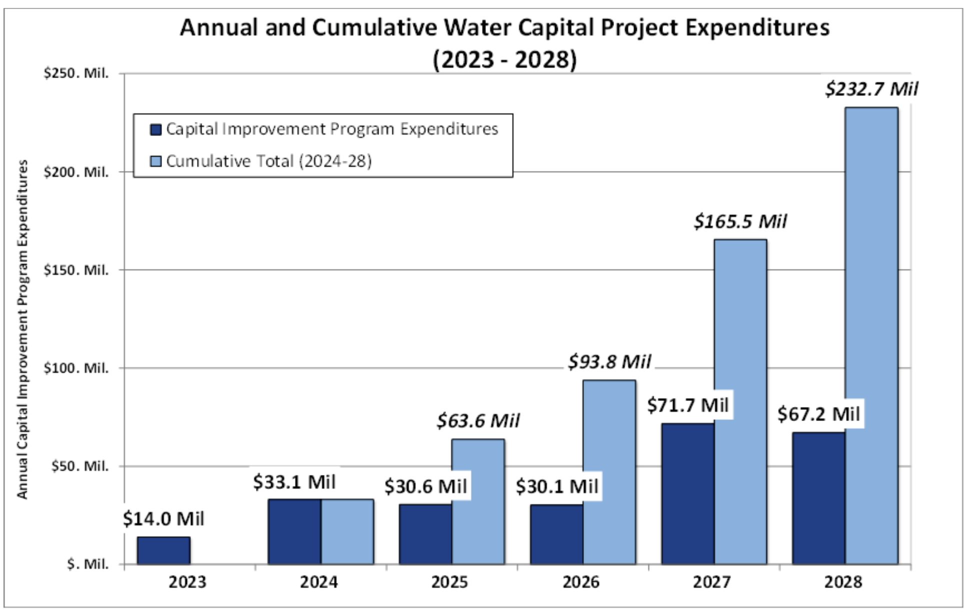
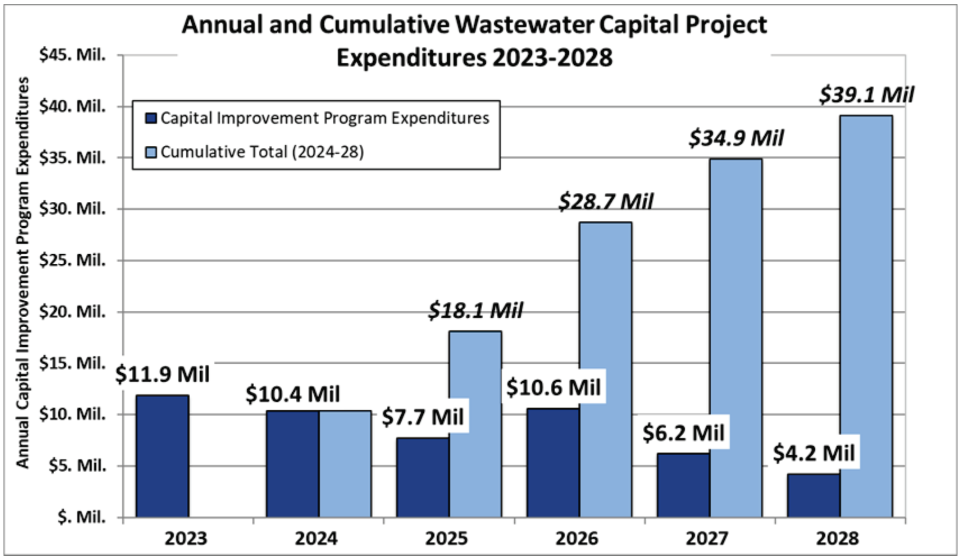


Figure 7. Wastewater System Capital Project Expenditures



3.3 2024 Revenue Requirements and Rate Revenue

Figure 8 summarizes the District's 2024 total revenue requirements, revenue from existing rates and rate increases, and other non-rate sources of revenues. This table indicates there are ending fund balance deficits of $3.1 million for the water fund and $2.3 million for the wastewater fund. These deficits reflect all revenues, excluding Facility Capacity Charges, less total operating and maintenance expenses and debt service. The ending balances (or deficits) are transferred to the operating reserve each year.

Figure 8. Revenue Requirements and Balance of Funds in 2024

Financial Plan Component	2024 Water Utility ($M)	2024 Wastewater Utility ($M)
Total Revenue Requirements	$63.4	$31.8
Revenue from Existing Rates	$40.2	$25.2
Non-Rate Revenue		
Property Tax Revenue	$11.7	$4.0
Hydro Revenue	$3.5	$0.0
Misc. Other Revenue	$4.8	$0.3
	$20.1	$4.3
Ending Surplus (Deficit)	($3.1)	($2.3)

The COS study determined that additional rate increases for both the water and wastewater utilities were needed to generate revenues sufficient to meet the total financial obligations, cover operating costs, and maintain reasonable reserves. These results are summarized in Figure 9. While the wastewater utility shows an ending year deficit, current reserve levels are sufficient to cover these deficits, although after 2028 this trend will need to be addressed.

Figure 9. Summary of Financial Plan Results (2024-2028)

Water Financial Plan ($M)	2024	2025	2026	2027	2028
Total Revenue Requirements	$63.4	$65.9	$76.8	$81.1	$89.0
Revenue from Existing Rates	$40.2	$40.3	$40.4	$40.6	$40.7
Non-Rate Revenue	$20.1	$20.2	$20.4	$20.5	$20.6
Revenue from Rate Increases	$4.8	$10.3	$16.4	$23.3	$31.0
Ending Surplus (Deficit)	$1.7	$4.9	$0.3	$3.3	$3.3

Wastewater Financial Plan ($M)	2024	2025	2026	2027	2028
Total Revenue Requirements	$31.8	$32.4	$32.8	$34.1	$35.2
Revenue from Existing Rates	$25.2	$25.6	$26.0	$26.3	$26.6
Non-Rate Revenue	$4.3	$4.4	$4.4	$4.4	$4.4
Revenue from Rate Increases	$0.7	$1.3	$2.1	$2.8	$3.6
Ending Surplus (Deficit)	-$1.6	-$1.1	-$0.4	-$0.6	-$0.6

3.4 Summary of Financial Plans

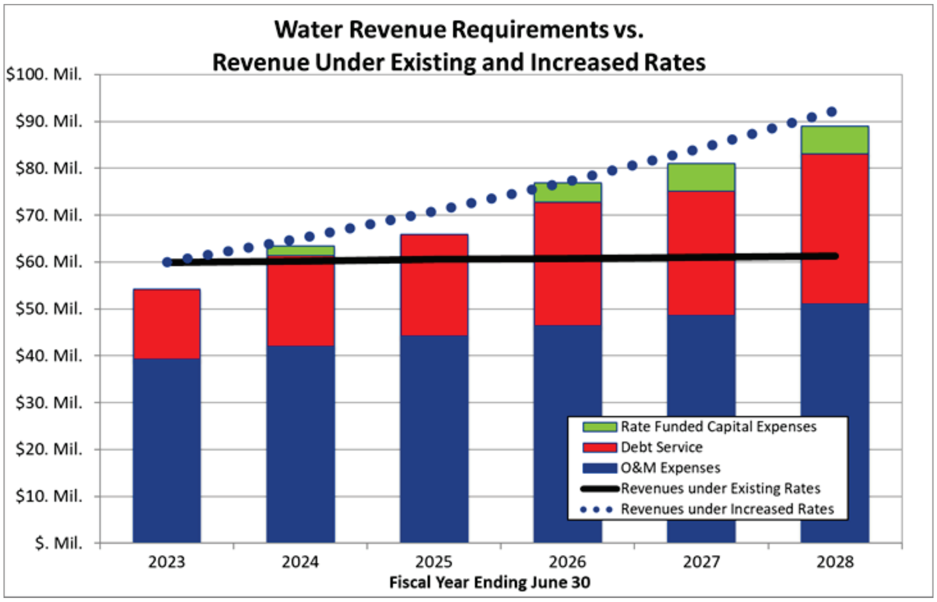
The following is a summary of the projected financial plans for the water and wastewater enterprise funds. It includes three types of projections: (1) sources of funds, including rate revenue and non-operating revenues such as interest earnings, (2) uses of funds (or expenses), including operating and capital expenses (e.g., hydro operations, engineering, information technology, construction costs, etc.), and (3) operating and capital reserves.

WATER UTILITY FINANCIAL PLANS

Figures 10 and 11 illustrate the Water Enterprise Fund's financial plan and ending reserve fund levels, while Figures 12 and 13 provide numerical details of these figures. As shown in Figures 10 and 11, the District will be able to cover annual operating costs and debt service with the proposed rate increases, but reserve levels will be below the minimum target levels. The only remedy for this problem is to either increase rates more or reduce costs, most likely planned capital improvement expenditures. The District Board is aware of this concern and has directed District staff to proceed with this plan.

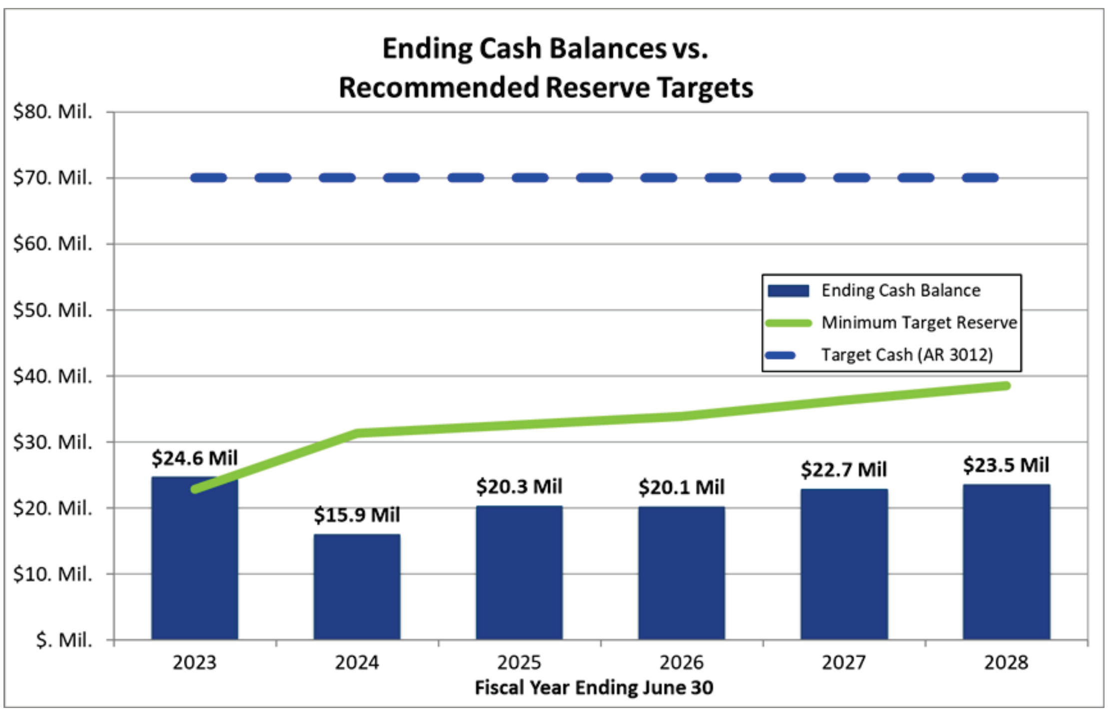
Tank Recoating & Replacement ($30 million)
(from EID's 2024-2028 Capital Improvement Plan)

Figure 10. Summary of the Water Financial Plan



The minimum target reserve shown in Figure 11 is the combined target operating reserve (which is 90 days of O&M costs plus five million for additional emergencies), and the target capital improvement and replacement reserve (which is estimated based on the total annual depreciation).[12]

Figure 11. Water Sources and Uses of Funds



[12] *Estimated as total annual depreciation, from 2021 ACFR, plus depreciation on new CIP assuming 40-year useful life.*

Figure 12. Table of the Water Financial Plan

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget 2023	5-Year Rate Adoption Period 2024	2025	2026	2027	2028
Sources of Water Funds						
Rate Revenue Under Prevailing Rates	$ 40,021,878	$ 40,172,760	$ 40,324,212	$ 40,441,152	$ 40,558,431	$ 40,676,051
Property Tax Revenues	11,700,000	11,744,109	11,788,384	11,822,571	11,856,856	11,891,241
Hydroelectric Revenues	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
Surcharges & Other Income	2,088,496	2,096,370	2,104,273	2,110,375	2,116,495	2,122,633
Non-Rate Revenues	1,650,000	1,732,500	1,819,125	1,910,081	2,005,585	2,105,865
Interest Earnings	1,000,000	1,003,770	1,007,554	1,010,476	1,013,407	1,016,345
Total Sources of Funds	**$ 59,960,374**	**$ 60,249,509**	**$ 60,543,548**	**$ 60,794,655**	**$ 61,050,775**	**$ 61,312,135**
Uses of Water Funds						
Operating Expenses	$ 39,292,678	$ 42,007,312	$ 44,107,677	$ 46,313,186	$ 48,628,496	$ 51,060,520
Debt Service	14,891,478	19,358,643	21,783,023	26,511,156	26,422,654	31,961,751
Rate-Funded Capital Expenses	-	2,000,000	-	4,000,000	6,000,000	6,000,000
Total Use of Funds	**$ 54,184,156**	**$ 63,365,955**	**$ 65,890,700**	**$ 76,824,342**	**$ 81,051,150**	**$ 89,022,272**
Surplus (Deficiency) before Rate Increase	**$ 5,776,218**	**$ (3,116,446)**	**$ (5,347,152)**	**$ (16,029,687)**	**$ (20,000,376)**	**$ (27,710,137)**
Additional Revenue from Rate Increases	-	4,820,731	10,258,479	16,375,755	23,261,046	31,009,049
Surplus (Deficiency) after Rate Increase	**$ 5,776,218**	**$ 1,704,285**	**$ 4,911,327**	**$ 346,068**	**$ 3,260,670**	**$ 3,298,912**
Projected Annual Revenue Increase	***0.00%***	***12.00%***	***12.00%***	***12.00%***	***12.00%***	***12.00%***
Cumulative Revenue Increases	*0.00%*	*12.00%*	*25.44%*	*40.49%*	*57.35%*	*76.23%*
Net Revenue Requirement[1]	**$ 50,445,660**	**$ 59,537,085**	**$ 61,967,302**	**$ 72,803,886**	**$ 76,929,069**	**$ 84,793,774**

1. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from water rates.

Figure 13. Table of the Water Reserve Fund Levels

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget 2023	5-Year Rate Adoption Period 2024	2025	2026	2027	2028
Operating Reserve						
Ending Balance	$ 10,183,000	$ 11,484,349	$ 15,476,000	$ 15,289,068	$ 15,974,738	$ 16,690,650
Recommended Minimum Target	*9,823,000*	*15,502,000*	*16,027,000*	*16,578,000*	*17,157,000*	*17,765,000*
Capital Rehabilitation & Replacement Reserve						
Ending Balance	$ 14,405,922	$ 4,405,922	$ 4,774,599	$ 4,774,599	$ 6,774,599	$ 6,774,599
Recommended Minimum Target	*13,000,000*	*15,830,000*	*16,590,000*	*17,340,000*	*19,130,000*	*20,810,000*
Capacity Fee Reserve						
Ending Balance	$ 15,280,511	$ 16,376,102	$ 15,420,716	$ 6,668,563	$ 9,703,920	$ 7,905,385
Recommended Minimum Target	*N.A.*	*N.A.*	*N.A.*	*N.A.*	*N.A.*	*N.A.*
Total Ending Balance	**$ 39,869,433**	**$ 32,266,373**	**$ 35,671,315**	**$ 26,732,230**	**$ 32,453,257**	**$ 31,370,634**
Total Recommended Minimum Target	***$ 22,823,000***	***$ 31,332,000***	***$ 32,617,000***	***$ 33,918,000***	***$ 36,287,000***	***$ 38,575,000***
Surplus/Deficit	***$ 17,046,433***	***$ 934,373***	***$ 3,054,315***	***$ (7,185,770)***	***$ (3,833,743)***	***$ (7,204,366)***

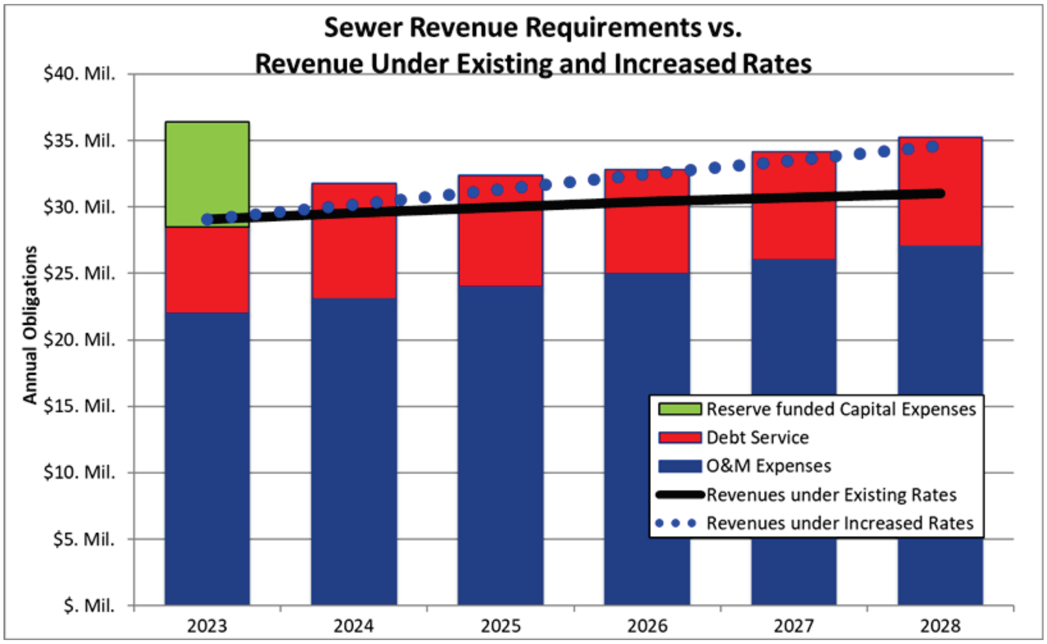
WASTEWATER UTILITY FINANCIAL PLANS

Figures 13 and 14 illustrate the Wastewater Enterprise Fund's financial plan and ending reserve fund levels, while Figures 15 and 16 provide numerical details of these figures. As with the water utility, the District will be able to cover the annual wastewater operating costs and debt service with the proposed rate increases. However, the reserve levels will end the five-year period at only about 50 percent of the minimum reserve target level.

WW Pipeline Replacement ($20 million)
(from EID's 2024-2028 Capital Improvement Plan)

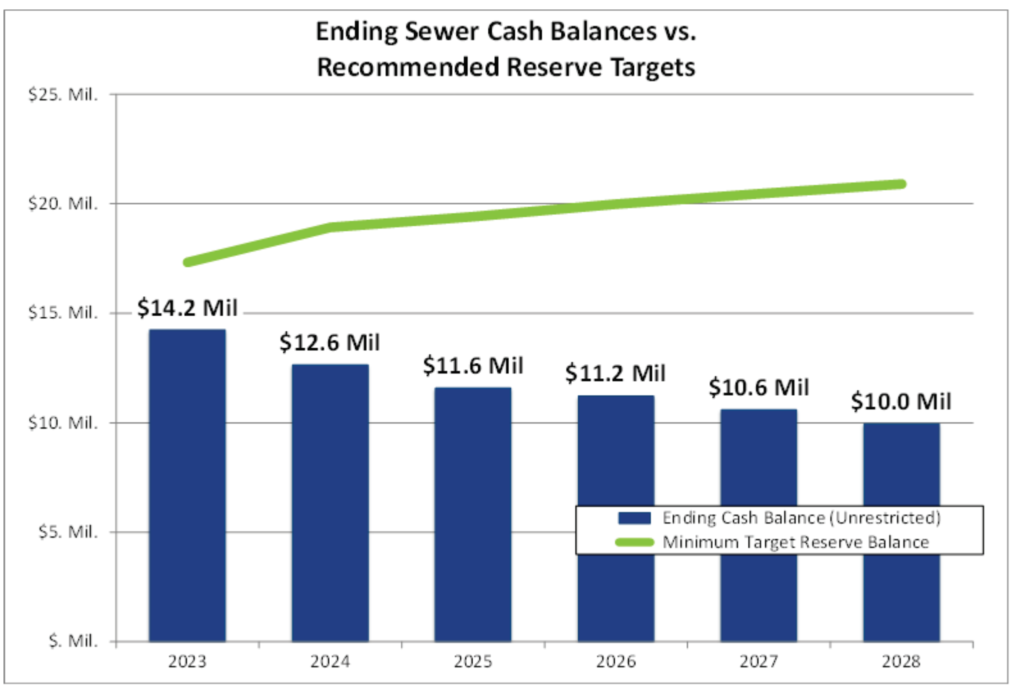
While the 3-percent rate increases could be higher, or the planned capital improvement expenditures could be reduced, the District will be able to adequately manage the utility despite these low reserves. However, this is not a long-term solution and the District will need to adopt higher rates when the next rate study is performed.

Figure 14. Summary of the Wastewater Financial Plan



The wastewater minimum target reserve shown in Figure 15 is the sum of the target operating reserve (90 days of O&M costs plus $1 million for additional emergencies), and the target capital improvement and replacement reserve based on the total annual depreciation.[13]

Figure 15. Wastewater Sources and Uses of Funds



[13] *Estimated as total annual depreciation, from 2021 ACFR, plus depreciation on new CIP assuming 40-year useful life.*

Figure 16. Table of the Wastewater Financial Plan

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget 2023	Projected 2024	2025	2026	2027	2028
Sources of Sewer Funds						
Rate Revenue Under Current Rates	$ 21,936,079	$ 22,050,147	$ 22,164,808	$ 22,280,065	$ 22,369,185	$ 22,458,662
Recycled Water Sales	2,900,000	3,161,000	3,445,490	3,755,584	3,943,363	4,140,531
Property Tax Revenues	3,900,000	3,978,000	3,998,686	4,019,479	4,035,557	4,051,699
Non-Rate Revenues	345,528	350,092	351,913	353,743	355,158	356,578
Total Sources of Funds	**$ 29,081,607**	**$ 29,539,239**	**$ 29,960,896**	**$ 30,408,870**	**$ 30,703,262**	**$ 31,007,470**
Uses of Sewer Funds						
Operating Expenses	$ 21,992,573	$ 23,092,202	$ 24,015,890	$ 24,976,526	$ 25,975,587	$ 27,014,610
Debt Service	6,520,625	8,703,891	8,353,253	7,866,501	8,164,455	8,208,558
Rate-Funded Capital Expenses	-	-	-	-	-	-
Total Use of Funds	**$ 28,513,198**	**$ 31,796,093**	**$ 32,369,143**	**$ 32,843,026**	**$ 34,140,041**	**$ 35,223,168**
Surplus (Deficiency) before Rate Increase	**$ 568,409**	**$ (2,256,854)**	**$ (2,408,247)**	**$ (2,434,156)**	**$ (3,436,779)**	**$ (4,215,698)**
Additional Revenue from Rate Increases	-	661,504	1,349,837	2,065,964	2,807,530	3,577,083
Surplus (Deficiency) after Rate Increase	**$ 568,409**	**$ (1,595,350)**	**$ (1,058,411)**	**$ (368,193)**	**$ (629,249)**	**$ (638,615)**
Projected Annual Revenue Increase	***0.00%***	***3.00%***	***3.00%***	***3.00%***	***3.00%***	***3.00%***
Cumulative Revenue Increases	*0.00%*	*3.00%*	*6.09%*	*9.27%*	*12.55%*	*15.93%*
Net Revenue Requirement[1]	**$ 28,167,670**	**$ 31,446,001**	**$ 32,017,230**	**$ 32,489,284**	**$ 33,784,883**	**$ 34,866,590**

1. Total Use of Funds less non-rate revenues. This is the annual amount needed from sewer rates.

Figure 17. Table of the Wastewater Reserve Fund Levels

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget 2023	Projected 2024	2025	2026	2027	2028
Operating Reserve						
Ending Balance	$ 5,500,000	$ 3,904,650	$ 2,846,240	$ 2,478,047	$ 1,848,798	$ 1,210,183
Recommended Minimum Target	*5,500,000*	*6,770,000*	*7,000,000*	*7,240,000*	*7,490,000*	*7,750,000*
Capital Rehabilitation & Replacement Reserve						
Ending Balance	$ 8,744,237	$ 8,744,237	$ 8,744,237	$ 8,744,237	$ 8,744,237	$ 8,744,237
Recommended Minimum Target	*10,000,000*	*10,260,000*	*10,450,000*	*10,720,000*	*10,870,000*	*10,980,000*
Rate Stabilization Reserve						
Ending Balance	$ -	$ -	$ -	$ -	$ -	$ -
Recommended Minimum Target	*1,828,000*	*1,893,000*	*1,960,000*	*2,029,000*	*2,098,000*	*2,170,000*
Total Ending Balance	**$ 14,244,237**	**$ 12,648,887**	**$ 11,590,476**	**$ 11,222,284**	**$ 10,593,035**	**$ 9,954,419**
Total Recommended Minimum Target	***$ 17,328,000***	***$ 18,923,000***	***$ 19,410,000***	***$ 19,989,000***	***$ 20,458,000***	***$ 20,900,000***
Surplus/Deficit	***$ (3,083,763)***	***$ (6,274,113)***	***$ (7,819,524)***	***$ (8,766,716)***	***$ (9,864,965)***	***$ (10,945,581)***

4. Cost of Service

The cost-of-service analysis bridges the methodology gap between the financial plans and the rate design. Using the revenue requirements developed in the financial plans, various cost allocation procedures are used to determine how the net revenue requirements from a "test year" (in this case 2024) should be allocated to each customer class. Separate cost-of-service analyses were prepared for: (1) potable water, (2) agricultural/raw water, (3) wastewater, and (4) recycled water.

4.1 Overview – Cost-of-Service Analyses

An overview of the cost-of-service methodology for water and wastewater utilities was previously included in Figures 3 and 4, and can be summarized by the following components of the analysis:

- **Classifying Cost Components:** The budget line items for the water system that make up the revenue requirements are assigned to various functional cost components including:
  - **Commodity –** variable costs related to supplying water to customers such as pumping costs, chemicals, and portions of personnel and operating and maintenance costs. Commodity costs for sewer utilities are related to the amount of effluent contributed to the sanitary sewer collection system.
  - **Capacity –** fixed costs typically associated with system capacity such as infrastructure repair and replacement, debt service, and portions of personnel and operating and maintenance costs.
  - **Customer –** These are the fixed costs of customer service-related functions such as meter reading, billing, service calls, and various administrative and overhead costs.
  - **Fire Protection –** District customers benefit from access to potable system capacity, so a small percentage of the potable system costs are allocated to fire protection.
  - **Direct Assignment –** These are portions of the District's water and wastewater systems that make up the agricultural irrigation/raw water and the recycled water services the District provides. These costs are separated out from the potable water and wastewater systems at this point and a separate cost-of-service analysis is provided for direct assignment costs.
- **Cost Allocation Factors –** Specific allocation factors are used to determine how much of each cost component should be collected from each customer class. For example, commodity-related costs are allocated based on annual water consumption, capacity-related costs are based on peaking factors (which indicate the system demands that each class imposes on the water infrastructure), and customer-related costs are allocated based on customer accounts.
- **Net Revenue Requirements by Customer Class –** By applying the cost allocation factors to each cost component (e.g., commodity, capacity, etc.), the net revenue from the test year that needs to be collected from each customer class is determined. It is important to note that this test year net revenue requirement is the rate revenue collected from existing rates plus the rate increase;

this is not the same as the annual net revenue requirement previously shown in Figure 12 – Table of the Water Financial Plan.

Once the net revenue requirements by customer class are determined, the rate design is used to calculate the fixed (base) charges and variable (commodity) charges. The following sections discuss the cost-of-service analysis for each utility.[14]

4.2 Cost of Service – Potable Water System

Classifying Potable Cost Components – Figure 18 summarizes the allocations of the District's 2024 total revenue requirements to individual cost components, including the Direct Assignment (DA) of the agricultural irrigation/raw water system. Since DA costs are treated as a separate cost-of-service analysis, DA costs are removed from the potable cost-of-service analysis at this point.

Figure 18. Classification of Potable Cost Components

Net Rev. Reqts. (Rate of 50% Fixed/50% Variable)	Total	Variable	Fixed			(DA)
		(COM)	(CAP)	(CA)	(FP)	
Net Revenue Reqts	**$ 44,993,492**	**$ 11,321,641**	**$ 22,160,020**	**$ 8,142,219**	**$ 1,598,280**	**$ 1,754,746**
Percent of Revenue	*100.0%*	*25.2%*	*49.3%*	*18.1%*	*3.6%*	*3.9%*
Rate-Design Adjustments to Fixed/Variable %	100.0%	50.0%	34.7%	12.8%	2.5%	*N.A.*
Total Revenue Requirements (before adjustments)	$ 44,993,492	$ 22,496,746	$ 15,627,593	$ 5,742,020	$ 1,127,132	*N.A.*

The one area that cost-of-service analysis overlaps with the rate design analysis is that rate design determines the percentage of costs collected from fixed vs. variable costs and, as shown below, this must be determined when the revenue requirements are allocated to the cost components.

As implied in the last line of Figure 18, there are additional adjustments to be made. These are (1) the deduction of the DA costs from each cost component, and (2) a small amount of DA costs that are shifted back to the potable system to account for the residential portion of ag/raw water customers who have potable water demands (i.e., ag/small farms with residences). Figure 19 summarizes these adjustments and shows that the total revenue requirement for potable customers is $43.47 million.

Figure 19. Adjustments to Potable Net Revenue Requirements

Net Rev. Reqts. (Rate of 50% Fixed/50% Variable)	Total	Variable	Fixed		
		(COM)	(CAP)	(CA)	(FP)
Rate-Design Adjustments to Fixed/Variable %	100.0%	50.0%	34.7%	12.8%	2.5%
Total Revenue Requirements (before adjustments)	$ 44,993,492	$ 22,496,746	$ 15,627,593	$ 5,742,020	$ 1,127,132
Direct Assignment Costs (before adjustments)	$ 1,755,719	$ 1,035,456	$ 719,290	$ 973	$ -
Fixed/Variable ($) (less DA)	*$ 43,237,773*	*$ 21,461,290*	*$ 14,908,303*	*$ 5,741,047*	*$ 1,127,132*
Cost Shifted from DA to Potable (Analysis below)	$ 232,739	*$ 86,106*	*$ 146,633*	*N.A.*	*N.A.*
Total Potable System Rev. Reqts.	***$ 43,470,512***	*$ 21,547,396*	*$ 15,054,936*	*$ 5,741,047*	*$ 1,127,132*

Note: customer costs of $973 were added to DA costs in this table.

Potable Cost Allocation Factors – Figures 20 through 23 show how the potable system cost allocation factors are calculated. Figures 20 and 21 also include the allocation percentages within the single family class, which are used later in calculating tiered rates for single family customers. As previously noted, commodity-related costs are allocated based on annual water consumption, capacity-related costs are

[14] *More broadly, the District's utilities are considered to be the water and wastewater utilities, with agricultural/raw water being a subset of water and recycled water being a subset of wastewater (although water manages the distribution system).*

based on peaking factors (which indicate the system demands that each class imposes on the water infrastructure), and customer-related costs are allocated based on customer accounts.

Figure 20. Calculation of Potable System Commodity Allocation Factors

Customer Class[1]	Consumption[2] (ccf/year)	% of Total Consumption
Single Family Residential		*(Within SFR:)*
Tier 1 (0-1,800 cf)	*2,772,453*	*46.7%*
Tier 2 (1,801-4,500 cf)	*1,596,793*	*26.9%*
Tier 3 (> 4,500 cf)	*1,562,349*	*26.3%*
Single-Family Total	5,931,596	**75.8%**
Multi Family Residential	600,212	**7.7%**
Comm. & Ind. (& potable landscape irrig.)	742,720	**9.5%**
Agricultural Irrigation - w/ residence[3]	36,288	**0.5%**
Recreational Turf	424,842	**5.4%**
Small Farm	92,232	**1.2%**
Potable Water System	**7,827,890**	**100.0%**

1. Customer data provided by the District for CY 22.
2. Source: 2022 EID Tiered Usage Analysis_09222023.pdf.
3. Assumes potable system use is 1,800 cf/mo. for the residential portion of consumption. The remaining consumption is assumed to be ag/raw water.

Figure 21. Calculation of Potable System Capacity Allocation Factors

Customer Class	Average Bi-Monthly Use (CCF)	Peaking Factors	Total Peak Bi-Monthly Use	Percent of Total
Single Family Residential				*(Within SFR:)*
Tier 1 (0-1,800 cf)	*483,261*	*1.13*	*546,367*	*39.8%*
Tier 2 (1,801-4,500 cf)	*272,228*	*1.64*	*447,266*	*32.5%*
Tier 3 (> 4,500 cf)	*232,413*	*1.64*	*380,554*	*27.7%*
Single-Family Total	531,283	1.65	877,295	**61.7%**
Multi Family Residential	50,819	1.37	69,863	**4.9%**
Comm. & Ind. (& potable landscape irrig.)	63,023	1.38	86,904	**6.1%**
Agricultural Irrigation - w/ residence	92,201	2.43	224,211	**15.8%**
Recreational Turf	37,631	2.08	78,122	**5.5%**
Small Farm	44,380	1.90	84,516	**5.9%**
Potable Water System	**819,337**	--	**1,420,911**	**100.0%**

1. Peaking factor by class are peak monthly consumption divided by average monthly consumption from CY 2022 data.

Figure 22. Calculation of Potable System Customer Allocation Factors

Customer Class	Number of Meters/Accounts	Percent of Total
Single Family Residential	39,418	**92.2%**
Multi Family Residential	1,034	**2.4%**
Comm. & Ind. (& potable landscape irrig.)	1,504	**3.5%**
Agricultural Irrigation - w/ residence	168	**0.4%**
Recreational Turf	212	**0.5%**
Small Farm	427	**1.0%**
Potable Water System	**42,763**	**100.0%**

Figure 23. Calculation of Potable System Fire Protection Allocation Factors

Customer Class	Number of Meters/Accounts	Public Fire Protection Required (gpm)	Duration at gpm (min)	Total PFP Requirements (million gallons)	Percent of Total *(without DA)*
Single Family Residential	39,418	1,500	120	7,095	**87.4%**
Multi Family Residential	1,034	3,000	120	372	**4.6%**
Comm. & Ind. (& potable landscape irrig.)	1,504	3,000	120	541	**6.7%**
Agricultural Irrigation - w/ residence	168	1,500	120	30	**0.4%**
Recreational Turf	*212*	*0*	*0*	*0*	***0.0%***
Small Farm	427	1,500	120	77	**0.9%**
Potable Water System	**42,763**	**--**	**--**	**8,116**	**100.0%**

Per District staff, multi-family and commercial classes have been set at 3,000 gpm and 120 minutes.

Potable System Net Revenue Requirements by Customer Class – By applying the cost allocation factors to each of the four cost components (i.e., commodity, capacity, customer, and fire protection), the net revenue requirements for each customer class are calculated, as shown in Figure 24. For example, the commodity factor for single-family customer (75.8% from Figure 20) times the $21.54 million (from Figure 19) is the $16.3 million shown in Figure 24.

Figure 24. Potable System Revenue Requirements by Customer Class

Classification Components	Adjusted Net Rev. Reqts. *(Includes Ag w/ Resid., SF/DI Accts.)*	Customer Classes					
		Single Family Residential	Multi Family Residential	Comm. & Ind. (& potable landscape irrig.)	Agricultural Irrigation - w/ residence	Recreational Turf	Small Farm
Commodity (COM)	**$ 21,547,396**	$ 16,327,574	$ 1,652,171	$ 2,044,443	$ 99,888	$ 1,169,439	$ 253,882
Capacity (CAP)	**$ 15,054,936**	$ 9,295,182	$ 740,219	$ 920,767	$ 2,375,577	$ 827,719	$ 895,473
Customer Related (CA)	**$ 5,741,047**	$ 5,291,972	$ 138,817	$ 201,916	$ 22,554	$ 28,462	$ 57,326
Public Fire Protection (FP)	**$ 1,127,132**	$ 985,369	$ 51,696	$ 75,194	$ 4,200	$ -	$ 10,674
Net Revenue Requirement	**$ 43,470,512**	**$ 31,900,096**	**$ 2,582,903**	**$ 3,242,320**	**$ 2,502,219**	**$ 2,025,619**	**$ 1,217,355**
% of Total Potable Rev. Reqts.:	*100.0%*	*73.4%*	*5.9%*	*7.5%*	*5.8%*	*4.7%*	*2.8%*

4.3 Cost of Service – Ag Irrigation/Raw Water System

The same steps used to calculate the revenue requirements by customer class for the potable water system are also used for the ag irrigation/raw water system (or ag/raw water).

Classifying Ag/Raw Water Cost Components – Revenue requirements for the ag/raw water system of $1.755 million were previously shown in Figure 18. After some of those costs were shifted back to the potable system for the potable services that ag and small farm customers receive, the adjusted revenue requirements for the ag/raw water system are $1.52 million, as restated in Figure 25.

Figure 25. Classification of Ag/Raw Water Cost Components

Allocation Adjustment for Direct Assignment Costs*:*				
Direct Assignment Costs [1]	Total	*Variable (COM)*	*Fixed (CAP)* [2]	*Fixed (CA)* [2]
Rate Revenue ($) Unadjusted	*$1,755,719*	*$1,035,456*	*$719,290*	*$973*
% Reductions (% counted in Potable SFR)		8.3%	20.4%	0.0%
Shifted to Potable/SFR:	$ 232,739	$ 86,106	$ 146,633	$ -
Adjusted (New) DA Revenue Requirements	**$ 1,522,980**	**$ 949,350**	**$ 572,657**	**$ 973**

1. Only Ag-related costs are included here (i.e., Ag w/ residence, Small Farms/DI are treated as potable customers for Tier 1 consumption).
2. Potable % allocations are adjusted due to the equivalent 5/8" and 3/4" meters for Ag w/Resid., Small Farms/DI accounts that are included in potable rates.

Ag/Raw Water Cost Allocation Factors – Figure 26 shows the calculation of the ag/raw water system commodity cost allocation factors, and Figures 27 and 28 show the allocation factors for the capacity and customer cost components.

Figure 26. Calculation of Ag/Raw Water Commodity Allocation Factors

Customer Class[1]	Consumption (ccf/year)	% of Total Consumption
Agricultural Irrigation - w/ residence[2]	1,006,238	**57.3%**
Agricultural Irrigation - w/o residence	211,459	**12.0%**
Small Farm[2]	410,740	**23.4%**
Raw Water - Landscape Irrigation	3,197	**0.2%**
Raw Water - Continuous Flow/Flat	125,218	**7.1%**
Total:	**1,756,852**	**100.0%**

1. Customer data provided by the District for CY 22.
2. Assumes potable consumption has been deducted.

Figure 27. Calculation of Ag/Raw Water Capacity Allocation Factors

Customer Class	Peaking Factor	Total Peak Bi-Monthly Use	Percent of Total[1]
Agricultural Irrigation - w/ residence	2.43	224,211	**58.2%**
Agricultural Irrigation - w/o residence	2.31	43,107	**11.2%**
Small Farm	1.90	84,516	**22.0%**
Raw Water - Landscape Irrigation	3.83	1,097	**0.3%**
Raw Water - Continuous Flow/Flat	2.82	32,098	**8.3%**
Total:		**385,028**	**100.0%**

1. From water rate analysis, peaking factor by class.

Figure 28. Calculation of Ag/Raw Water Customer Allocation Factors

Customer Class	Number of Meters/Accounts	Percent of Total
Agricultural Irrigation - w/o residence[1,2]	24	**82.8%**
Raw Water - Landscape Irrigation[2]	5	**17.2%**
Total:	**29**	**100.0%**

1. Customer costs for Ag with Residences are included in Potable Water (excluded here).
2. No Customer-Related costs are assigned to Ag w/ Resid., or Small Farms; these customers pay Customer costs through their Potable charges. Ag w/o Resid; Raw Water customers do not have potable charges and therefore pay Customer-Related costs.

Ag/Raw Water Net Revenue Requirements by Customer Class – By applying the Ag/Raw Water cost allocation factors to the cost components, the net revenue requirements by class are shown in Figure 29.

Figure 29. Ag/Raw Water Revenue Requirements by Customer Class

Classification Components	Net Revenue Requirements[1]	Customer Classes (Direct Assignment)				
		Agricultural Irrigation - w/ residence	Agricultural Irrigation - w/o residence	Small Farm	Raw Water - Landscape Irrigation	Raw Water - Continuous Flow/Flat
Commodity	$ 949,350	$ 543,741	$ 114,266	$221,952	$ 1,728	$ 67,664
Capacity	$ 572,657	$ 333,472	$ 64,113	$125,702	$ 1,632	$ 47,739
Customer Related [2]	$ 973	$ -	$ 805	$ -	$ 168	$ -
Net Revenue Requirement	**$ 1,522,980**	**$ 877,212**	**$ 179,184**	**$347,654**	**$ 3,527**	**$ 115,403**
% of Total	*100.0%*	*57.6%*	*11.8%*	*22.8%*	*0.2%*	*7.6%*

1. *Assumes an allocation to Commodity, Capacity, Customer-Related and Fire Protection and classifications in the same proportion as non-DA costs with the exception of fire protection costs.*
2. *No Customer-Related costs are assigned to Ag w/ Resid., or Small Farms; these customers pay Customer costs through their Potable charges. Ag w/o Resid; Raw Water customers do not have potable charges and therefore pay Customer-Related costs.*

4.4 Cost of Service – Wastewater System

Classifying Wastewater Cost Components – Revenue requirements for the wastewater system, including the three-percent increase, are $22.7 million as shown in Figure 30. The wastewater system also follows a rate design collecting 50 percent of the rate revenue from fixed charges and 50 percent from variable charges.

Figure 30. Classification of Wastewater Cost Components

Net Rev. Reqts (COS Allocation - 50% Fixed/50% Variable)	Total	(VOL)	(BOD)	(TSS)	(CA)
Rate-Design Adjustments to Fixed/Variable %	100.0%	50.0%	18.6%	18.6%	12.7%
Net Revenue Reqts. less Direct Assignment	**$ 22,711,651**	$ 11,355,826	$ 4,234,790	$ 4,234,790	$ 2,886,245

Wastewater Cost Allocation Factors – Figure 31 shows the calculation of the wastewater system commodity (or flow-based) cost allocation factors, and Figure 32 shows the allocation percentages for the fixed capacity allocations, as represented by the total annual pounds of BOD and TSS. Allocation factors for customer cost components are shown in Figure 33.

Figure 31. Calculation of Wastewater Commodity (Flow) Allocation Factors

Customer Class[1]	Number of Dwelling Units / Accounts[2]	Annual Consumption (ccf/year)	Winter Consumption (Jan-Mar. '22)	Annualized Winter Consumption (ccf/Yr.)[3]	Assumed Annual Effluent (Flow) (ccf/year)	% of Total Flow
Residential Customers						
Single Family Residential	23,768	1,848,588	356,520	1,426,080	1,426,080	**69.9%**
Multi Family Residential	5,137	281,917	61,644	246,576	246,576	**12.1%**
Commercial-Industrial						
Commercial - Low	529	119,961	23,805	95,220	119,961	**5.9%**
Commercial - Medium/Low	198	112,466	25,542	102,168	112,466	**5.5%**
Commercial - Medium	33	7,663	1,188	4,752	7,663	**0.4%**
Commercial - Medium/High	120	87,963	18,720	74,880	87,963	**4.3%**
Commercial - High	0	0	0	0	0	**0.0%**
Schools						
Schools	26	39,682	39,682	158,727	39,682	**1.9%**
Annual Totals:	**29,811**	**2,498,240**	**527,101**	**2,108,403**	**2,040,391**	**100.0%**

1. Customer data provided by the District for CY 22.
2. Single & multi-family residential are based on the no. of dwelling units; all other customers are based on the no. of accounts.
3. Annual consumption for all customer classes based on average winter water consumption.

Figure 32. Calculation of Wastewater Capacity (BOD/TSS) Allocation Factors

Customer Class[1]	Assumed Annual Effluent (Flow) (ccf/year)	BOD mg/l	BOD lbs/day	BOD lbs	% of Total BOD	TSS mg/l	TSS lbs/day	TSS lbs	% of Total TSS
Residential Customers									
Single Family Residential	1,426,080	229	5,582	2,037,263	**63.3%**	229	5,582	2,037,263	**66.8%**
Multi Family Residential	246,576	229	965	352,252	**10.9%**	229	965	352,252	**11.5%**
Commercial-Industrial									
Commercial - Low	119,961	140	287	104,770	**3.3%**	127	260	95,041	**3.1%**
Commercial - Medium/Low	112,466	262	504	183,819	**5.7%**	223	429	156,457	**5.1%**
Commercial - Medium	7,663	393	51	18,787	**0.6%**	535	70	25,576	**0.8%**
Commercial - Medium/High	87,963	887	1,334	486,734	**15.1%**	647	973	355,036	**11.6%**
Commercial - High	0	1760	-	0	**0.0%**	1536	-	-	**0.0%**
Schools									
Schools	39,682	150	102	37,132	**1.2%**	120	81	29,706	**1.0%**
Annual Totals:	**2,040,391**		**8,824**	**3,220,757**	**100.0%**		**8,360**	**3,051,330**	**100.0%**

Figure 33. Calculation of Wastewater Customer Allocation Factors

Customer Class	Number of Dwelling Units / Accounts[1]	Percent of Total
Residential Customers		
Single Family Residential	23,768	**94.9%**
Multi Family Residential	375	**1.5%**
Commercial-Industrial		
Commercial - Low	529	**2.1%**
Commercial - Medium/Low	198	**0.8%**
Commercial - Medium	33	**0.1%**
Commercial - Medium/High	120	**0.5%**
Commercial - High	0	**0.0%**
Schools		
Schools	26	**0.1%**
Total:	**25,049**	**100.0%**

1. SFR customers are based on the number of dwelling units and all other customers are based on the number of accounts.

Wastewater Net Revenue Requirements by Customer Class – By applying the wastewater cost allocation factors to the cost components, the net revenue requirements by class are shown in Figure 34.

Figure 34. Wastewater Revenue Requirements by Customer Class

Customer Class	Cost Classification Components				Total Cost-of-Service Net Revenue	% of COS Net Rev. Reqts. by Class
	Volume	BOD	TSS	Customer		
Net Revenue Requirements [1]	***$ 11,355,826***	***$ 4,234,790***	***$ 4,234,790***	***$ 2,886,245***	***$ 22,711,651***	--
% of Total	*50.0%*	*18.6%*	*18.6%*	*12.7%*	*100.0%*	--
Residential Customers						
Single Family Residential	$ 7,936,868	$ 2,678,681	$ 2,827,416	$ 2,738,643	$ 16,181,608	*71.2%*
Multi Family Residential	1,372,322	$ 463,157	488,874	$ 43,209	2,367,561	*10.4%*
Subtotal - Residential Customers	$ 9,309,190	$ 3,141,837	$ 3,316,290	$ 2,781,852	$ 18,549,169	*81.7%*
Commercial-Industrial						
Commercial - Low	$ 667,647	$ 137,756	$ 131,903	$ 60,953	$ 998,259	*4.4%*
Commercial - Medium/Low	$ 625,931	$ 241,693	$ 217,138	$ 22,814	1,107,577	*4.9%*
Commercial - Medium	$ 42,649	$ 24,703	$ 35,495	$ 3,802	106,650	*0.5%*
Commercial - Medium/High	$ 489,559	$ 639,978	$ 492,736	$ 13,827	1,636,101	*7.2%*
Commercial - High	$ -	$ -	$ -	-	-	*0.0%*
Subtotal - Commercial-Industrial Customers	$ 1,825,786	$ 1,044,130	$ 877,273	$ 101,397	$ 3,848,587	*16.9%*
Schools (100% Fixed)						
Schools	$ 220,850	$ 48,823	$ 41,227	$ 2,996	313,896	*1.4%*
Total:	**$ 11,355,826**	**$ 4,234,790**	**$ 4,234,790**	**$ 2,886,245**	**$ 22,711,651**	**100.0%**

1. Revenue requirement for each customer class is determined by multiplying the cost component by the allocation factors for each customer class.

4.5 Cost of Service – Recycled Water System

Classifying Recycled Water Cost Components – The recycled water system is a sub-set of the wastewater system, although distribution is managed by the potable water system utility and is therefore treated as a Direct Assignment cost (i.e., recycled costs are separated from wastewater system costs). Revenue requirements for the recycled water system, including the three-percent increase, are $3.24 million and has a rate design of 60 percent fixed and 40 percent variable charges, as shown in Figure 35. This figure also shows the net revenue requirements by customer class, which are the results of applying the cost allocation factors shown in Figures 36 through 38 to the cost components.

Figure 35. Classification and Allocation of Recycled Water Cost Components

Recycled Customer Class	Recycled Cost Classification Components			Cost-of-Service Net Revenue Reqts.	% of COS Net Revenue Reqts.
	(COM)	(CAP)	(CA)		
Net Revenue Requirements [1]	***$ 1,942,881***	***$ 647,627***	***$ 647,627***	***$ 3,238,135***	--
% of Total	*60.0%*	*20.0%*	*20.0%*	*100.0%*	
Commercial Landscape	$ 498,359	$ 140,762	$ 20,574	$ 659,695	*20.4%*
Recreational Turf	$ 257,946	$ 109,024	$ 1,372	368,342	*11.4%*
Residential - Dual Plumbed	$ 1,186,576	$ 397,841	$ 625,681	2,210,098	*68.3%*
Total:	**$ 1,942,881**	**$ 647,627**	**$ 647,627**	**$ 3,238,135**	**100%**

1. Revenue requirement by customer class is calculated by multiplying the revenue requirement from each cost classification by the allocation factors for each customer class.

Recycled Water Cost Allocation Factors – Figure 36 shows the calculation of the wastewater system commodity (or flow-based) cost allocation factors, and Figure 37 shows the allocation percentages for the fixed capacity allocations, as represented by the total annual pounds of BOD and TSS. Allocation factors for customer cost components are shown in Figure 38.

Figure 36. Calculation of Recycled Water Commodity Allocation Factors

Customer Class[1]	Consumption (ccf/year)	% of Total Flow
Commercial Landscape	450,378	**25.7%**
Recreational Turf	233,112	**13.3%**
Residential - Dual Plumbed[2]	1,072,336	**61.1%**
Total:	**1,755,826**	**100.0%**

1. Customer data provided by the District for CY 22.
2. Residential are based on the no. of dwelling units; all other customers are based on the number of accounts.

Figure 37. Calculation of Recycled Water Capacity Allocation Factors

Customer Class	Peaking Factor	Peak Month	Percent of Total
Commercial Landscape	1.39	52,169	**21.7%**
Recreational Turf	2.08	40,406	**16.8%**
Residential - Dual Plumbed	1.65	147,446	**61.4%**
Total:		**240,021**	**100.0%**

1. From water rate analysis, peaking factor by class.

Figure 38. Calculation of Recycled Water Customer Allocation Factors

Customer Class	Peaking Factor	Peak Month	Percent of Total
Commercial Landscape	1.39	52,169	**21.7%**
Recreational Turf	2.08	40,406	**16.8%**
Residential - Dual Plumbed	1.65	147,446	**61.4%**
Total:		**240,021**	**100.0%**

1. From water rate analysis, peaking factor by class.

5. Rate Design

Once the revenue requirements by customer class were determined based on the cost-of-service analyses, the rate design analyses determine the fixed (base) and variable (commodity) charges for each customer class.[15] As with the cost-of-service analyses, separate rate design analyses were prepared for the potable water, agricultural/raw water, wastewater, and recycled water systems as described below.

5.1 Rate Design – Potable Water System

Calculating Fixed Charges – Fixed bi-monthly (base) charges for potable customers are calculated for two separate sets of customers (1) single family, ag irrigation with residences, and small farms, and (2) multi-family, commercial/industrial, and recreational turf customers. The fixed charges collect capacity-related costs from customers based on the hydraulic capacity factors for each meter size, meaning these charges increase with the size of the meters. Figure 39 shows the capacity factors by meter size that were used.

Figure 39. Hydraulic Capacity Factors – Potable and Ag/Raw Water Customers

Meter Sizes	AWWA Capacity Factors	
	gpm	Factor
5/8"	20	**1.0**
3/4"	30	**1.0**
1"	50	**1.7**
1.5"	100	**3.3**
1.5" T	120	**4.0**
2"	160	**5.3**
2" T	160	**5.3**
3"	320	**10.7**
3" T	350	**11.7**
4"	500	**16.7**
4" T	630	**21.0**
6"	1,000	**33.3**
6" T	1,400	**46.7**
8" T	2,400	**80.0**
10" T	3,800	**126.7**
12" T	5,000	**166.7**

From AWWA Manual M22, Table 6-1. Displacement meters; Turbine class 2 for larger (T) meters.

Figure 40 shows the calculation of fixed charges for single family, ag irrigation, and small farms without fire protection costs added. Figure 41 shows the calculation for multi-family, commercial/industrial, and recreational turf customers. Additionally, there are fire protection costs that are added to these fixed charges, as shown in Figure 42.

[15] *As previously mentioned, there is some overlap between cost of service and rate design in that rate design sets the percent of rate revenue collected from fixed vs. variable charges and this must be reflected in the cost of service revenue requirements by customer class (e.g., Figures 34 and 35)*

Figure 40. Calculation of Potable Fixed Charges – SFR, Ag and Small Farms *(Not Including Fire Protection)*

Single-Family, Ag Irrig. w/ Residence, and Small Farm Customers		Meter Size									Total Meters
		5/8"	3/4"	1"	1.5"	1.5" T	2"	2" T	3" T	4" T	
Accounts/Equivalent Meters											
Single Family Residential		3,059	32,775	3,378	136	14	11	41	2	2	39,418
Agricultural Irrigation - w/ residence[1]		-	168	-	-	-	-	-	-	-	168
Small Farm		-	427	-	-	-	-	-	-	-	427
Total Accounts		3,059	33,370	3,378	136	14	11	41	2	2	40,013
Hydraulic Capacity Factor[2]		*1.0*	*1.0*	*1.7*	*3.3*	*4.0*	*5.3*	*5.3*	*11.7*	*21.0*	
Total Equivalent Meters		3,059	33,370	5,743	449	56	58	217	23	42	43,017
	% of meters	*7.1%*	*77.6%*	*13.3%*	*1.0%*	*0.1%*	*0.1%*	*0.5%*	*0.1%*	*0.1%*	*100.0%*
Customer Costs ($/Acct/bi-mo.)[3]		$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	
Capacity Costs ($/Acct/bi-mo.)[4]		$ 51.63	$ 51.63	$ 87.77	$ 170.38	$ 206.52	$ 273.64	$ 273.64	$ 604.07	$ 1,084.24	
Bi-Monthly Meter Charge		$ 74.01	$ 74.01	$ 110.15	$ 192.76	$ 228.90	$ 296.02	$ 296.02	$ 626.45	$ 1,106.61	
Annual Fixed Costs Allocated to Bi-Monthly Meter Charges											
Customer Costs	$ 5,371,853										
Capacity Costs	$ 12,566,231										
	$ 759,777	*Adjustment (deduction for Credit to Dual-Plumbed RW Single-Family customers for Base Charges)*									
Total Capacity Costs	$ 13,326,008										
Fixed Costs Recovered bi-monthly	$ 18,697,861										

1. All meters counted as 3/4"

2. Source: AWWA Manual M22, Table 6-1. Displacement meters are used for smaller meters and Turbine class 2 for larger (T) meters.

3. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.

4. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

Figure 41. Calculation of Potable Fixed Charges – MFR, Commercial/Industrial, Rec Turf *(Not Including Fire Protection)*

Multi-Family, Comm./Industrial, Rec Turf Customers		Meter Size 5/8"	3/4"	1"	1.5"	1.5" T	2"	2" T	3"	3" T	4"	4" T	6"	6" T	8" T	10"T	12" T	Total Meters
Accounts/Equivalent Meters																		
Multi Family Residential		67	478	209	77	11	138	30	9	6	2	3	4	-	-	-	-	1,034
Comm. & Ind. (& potable landscape irrig.)		56	888	226	118	55	59	70	5	8	4	1	5	4	3	1	1	1,504
Recreational Turf		-	10	9	17	10	118	32	5	4	3	2	1	1	-	-	-	212
Total Accounts		123	1,376	444	212	76	315	132	19	18	9	6	10	5	3	1	1	2,750
Hydraulic Capacity Factor [2]		*1.0*	*1.0*	*1.7*	*3.3*	*4.0*	*5.3*	*5.3*	*10.7*	*11.7*	*16.7*	*21.0*	*33.3*	*46.7*	*80.0*	*126.7*	*166.7*	
Total Equivalent Meters		123	1,376	755	700	304	1,670	700	203	211	150	126	333	234	240	127	167	7,417
	% of meters	*1.7%*	*18.6%*	*10.2%*	*9.4%*	*4.1%*	*22.5%*	*9.4%*	*2.7%*	*2.8%*	*2.0%*	*1.7%*	*4.5%*	*3.1%*	*3.2%*	*1.7%*	*2.2%*	*100.0%*
Bi-Monthly Fixed Service Charges																		
Customer Costs ($/Acct/bi-mo.) [3]	**$ 369,195**	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	$ 22.38	
Capacity Costs ($/Acct/bi-mo.) [4]	**$ 2,488,705**	$ 55.93	$ 55.93	$ 95.07	$ 184.56	$ 223.71	$ 296.41	$ 296.41	$ 598.41	$ 654.34	$ 933.97	$1,174.46	$1,862.35	$2,611.77	$4,474.12	$7,085.88	$9,322.94	
Bi-Monthly Meter Charge	**$ 2,857,900**	$ 78.30	$ 78.30	$ 117.45	$ 206.93	$ 246.08	$ 318.79	$ 318.79	$ 620.79	$ 676.71	$ 956.35	$1,196.83	$1,884.73	$2,634.14	$4,496.49	$7,108.26	$9,345.32	

Figure 42. Potable Fixed Charges Including Fire Protection Costs

Potable Water Customers		Meter Size 5/8"	3/4"	1"	1.5"	1.5" T	2"	2" T	3"	3" T	4"	4" T	6"	6" T	8" T	10"T	12" T
Additional Fire Protection Fixed Charges ($/Acct/bi-mo.) [4]																	
SFR, Ag. Irrig w/Resid., Small F	*$ 1,000,243*	*$ 3.88*	*$ 3.88*	*$ 6.59*	*$ 12.79*	*$ 15.50*	*$ 20.54*	*$ 20.54*	*$ 41.47*	*$ 45.34*	*$ 64.72*	*$ 81.38*	*$ 129.05*	*$ 180.98*	*$ 310.03*	*$ 491.01*	*$ 646.02*
MFR, Comm./Ind., Rec Turf	*$ 126,890*	*$ 2.85*	*$ 2.85*	*$ 4.85*	*$ 9.41*	*$ 11.41*	*$ 15.11*	*$ 15.11*	*$ 30.51*	*$ 33.36*	*$ 47.62*	*$ 59.88*	*$ 94.95*	*$ 133.16*	*$ 228.12*	*$ 361.28*	*$ 475.34*
	$ 1,127,132																
Bi-Monthly Fixed Service Charges ($/Acct/bi-mo.) (Including Fire Protection)																	
SFR, Ag. Irrig w/Resid., Small Farms		*$ 77.88*	*$ 77.88*	*$ 116.74*	*$ 205.54*	*$ 244.40*	*$ 316.56*	*$ 316.56*	*$ 616.29*	*$ 671.79*	*$ 949.32*	*$ 1,187.99*	*$ 1,870.71*	*$ 2,614.49*	*$ 4,462.83*	*$ 7,054.94*	*$ 9,275.17*
MFR, Comm./Ind., Rec Turf		*$ 81.15*	*$ 81.15*	*$ 122.30*	*$ 216.34*	*$ 257.49*	*$ 333.90*	*$ 333.90*	*$ 651.30*	*$ 710.08*	*$ 1,003.97*	*$ 1,256.71*	*$ 1,979.68*	*$ 2,767.30*	*$ 4,724.61*	*$ 7,469.54*	*$ 9,820.66*
Annual Revenue from Bi-Monthly Meter Charges *(Including Fire Protection)*																	
Customer Costs	*$ 5,741,047*	*$ 427,192*	*$ 4,664,744*	*$ 513,114*	*$ 46,720*	*$ 12,083*	*$ 43,766*	*$ 23,226*	*$ 2,551*	*$ 2,685*	*$ 1,208*	*$ 1,074*	*$ 1,343*	*$ 671*	*$ 403*	*$ 134*	*$ 134*
Capacity Costs (Fire Protection Ac	*$ 16,941,845*	*$ 1,062,129*	*$ 11,598,611*	*$ 2,178,674*	*$ 396,192*	*$ 125,861*	*$ 608,194*	*$ 319,095*	*$ 71,697*	*$ 82,065*	*$ 53,006*	*$ 58,424*	*$ 117,438*	*$ 82,348*	*$ 84,640*	*$ 44,683*	*$ 58,790*
Total	*$ 22,682,893*																

Calculating Variable Charges – Variable (commodity) charges for potable customers consist of uniform rates for all customer classes except single family, which has three tiers. These commodity rates are simply the target revenue from each customer class divided by the total annual consumption in each class. Figure 43 shows the calculation of uniform rates and Figure 44 shows the calculation of single-family tiered rates.

Figure 43. Calculation of Potable System Commodity Rates

Potable Water Customer Class	Number of Accounts	Target Rev. Req't	Water Consumption	Commodity Rates ($/ccf)	Commodity Rates ($/cf)
Single Family Residential	39,418	$ 16,327,574	5,931,596	$ 2.7526	**$0.027526**
Multi Family Residential	1,034	$ 1,652,171	600,212	$ 2.7526	**$0.027526**
Comm./Ind./potable landscape irrig.	1,504	$ 2,044,443	742,720	$ 2.7526	**$0.027526**
Ag. Irrigation - w/ residence	168	$ 99,888	36,288	$ 2.7526	**$0.027526**
Recreational Turf	212	$ 1,169,439	424,842	$ 2.7526	**$0.027526**
Small Farm	427	$ 253,882	92,232	$ 2.7526	**$0.027526**
Total	42,763	$ 21,547,396	7,827,890		

Figure 44. Calculation of Potable System Tiered Rates – Single Family

Potable Water Customer Class		Upper Tier Breakpoint	Water Consumption (ccf/yr.)[1]	Commodity Rates ($/ccf)	Commodity Rates ($/cf)	Tier Rate Revenue
Single Family Residential	*Tier 1*	*1,800 cf/bi-mo.*	*2,772,453*	*$2.329*	***$0.023293***	*$6,457,977*
	Tier 2	*4,500 cf/bi-mo.*	*1,596,793*	*$2.800*	***$0.027998***	*$4,470,747*
	Tier 3	*-*	*1,562,349*	*$3.455*	***$0.034553***	*$5,398,312*
Total			*5,931,596*			*$16,327,036*
Target SFR Volumetric Rate Revenue						***$16,327,574***

1. 2022 consumption by tier. There was ~4% difference in the total consumption for the single-family residential from District totals, as the total consumption value in the model is based on actual consumption file provided by the District, whereas the tiered analysis is calculated based on how much was actually billed in each tier. These numbers were, therefore adjusted to match the SFR total.

As previously discussed, water agencies must demonstrate the cost basis of rates, particularly tiered rates. Because of the District's voluntary use of property tax revenues to reduce water rates, the actual "demonstrated cost basis" of rates is the revenue requirement without the use of property taxes. Appendix E presents this calculation for the Single-Family tiered rates.

5.2 Rate Design – Ag Irrigation/Raw Water System

While the 2012 rate study concluded that approximately 2.1 percent of the value of system assets should be directly allocated to agricultural customers, the District updated this analysis and concluded that this direct allocation is now approximately 3.9 percent. This significantly increased agricultural rates contrary to the policies of avoiding rate shock. Therefore, to better reflect the broader community interests, the Board directed staff to (1) reduce the significant impact this has on agricultural water users, and (2) adjust the rate increases so they were more on par with other customer classes. However, this resulted in reducing ending cash reserves.[16] The agricultural irrigation/raw water rates presented below reflect these adjustments.

Calculating Fixed Charges – Based on the ag/raw water commodity-related revenue requirements previously shown in Section 4.2, fixed bi-monthly (base) charges are calculated in the same manner as for potable customers and are based on the same hydraulic capacity factors. Figure 45 shows the calculation of fixed charges. There are no fire protection costs added to these fixed charges.

[16] *While ending cash reserves were lower, rates for other customer classes were not increased due to this adjustment.*

Figure 45. Calculation of Potable Fixed Charges – Ag Irrigation and Small Farms

Customer Class - Direct Assignment	Meter Size										
	5/8"	3/4"	1"	1.5"	1.5" T	2"	2" T	3" T	4" T	6" T	8" T	Total
Accounts/Equivalent Meters												
Agricultural Irrigation - w/ residence	-	-	10	12	11	3	78	3	38	11	-	166
Small Farm (ONLY)	-	-	110	28	4	3	39	2	4	2	1	193
Total Accounts	-	-	120	40	15	6	117	5	42	13	1	359
Agricultural Irrigation - without residence	-	-	-	1	-	1	15	3	3	1	-	24
Raw Water - Landscape Irrigation	-	2	1	2	-	-	-	-	-	-	-	5
Total Accounts	-	2	1	3	-	1	15	3	3	1	-	29
Hydraulic Capacity Factor [1]	*1.0*	*1.0*	*1.7*	*3.3*	*4.0*	*5.3*	*5.3*	*11.7*	*21.0*	*46.7*	*80.0*	
Total Equivalent Meters	-	2	206	142	60	37	700	94	945	654	80	2,919
% of equiv. meters	*0.0%*	*0.1%*	*7.0%*	*4.9%*	*2.1%*	*1.3%*	*24.0%*	*3.2%*	*32.4%*	*22.4%*	*2.7%*	*100.0%*
Bi-Monthly Fixed Service Charges *($/Acct/bi-mo.)*												
Meter Charge - Ag w/o Res. & Raw Lndscp.												
Customer Costs - Ag w/o Res. & Raw Lndscp. [2]	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	$ 5.59	
Capacity Costs - Ag w/o Res. & Raw Lndscp. [3]	$ 15.71	$ 15.71	$ 26.71	$ 51.85	$ 62.84	$ 83.27	$ 83.27	$ 183.82	$ 329.93	$ 733.70	$ 1,256.88	
Meter Charge - Ag w/o Res. & Raw Landscape	*$ 21.30*	*$ 21.30*	*$ 32.30*	*$ 57.44*	*$ 68.43*	*$ 88.86*	*$ 88.86*	*$ 189.41*	*$ 335.52*	*$ 739.29*	*$ 1,262.47*	
Meter Charge - Ag w/ Res. & Small Farm (ONLY)												
Add'l Capacity Costs - Ag w/ Res. & SF (ONLY)	N.A	N.A	$ 26.71	$ 51.85	$ 62.84	$ 83.27	$ 83.27	$ 183.82	$ 329.93	$ 733.70	$ 1,256.88	
plus Single-Family Basic Charge for 3/4" Mete	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	$ 77.88	
Total Meter Charge - Ag w/ Res. & Small Farm	*$ 77.88*	*$ 77.88*	*$ 104.59*	*$ 129.73*	*$ 140.73*	*$ 161.15*	*$ 161.15*	*$ 261.70*	*$ 407.81*	*$ 811.58*	*$ 1,334.76*	

1. Source: AWWA Manual M22, Table 6-1. Displacement meters are used for smaller meters and Turbine class 2 for larger (T) meters.
2. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
3. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

Calculating Ag/Raw Water Variable Charges – Variable (commodity) charges for ag/raw water customers consist of uniform rates for all customers. As with potable rates, these commodity rates are simply the target revenue from each customer class divided by the total annual consumption in each class. Figure 46 shows the calculation of uniform rates for ag irrigation and small farms and Figure 47 shows the rate calculation for raw water customers.

Figure 46. Calculation of Ag Irrigation/Small Farms Commodity Rates

Customer Class/Tier		Water Consumption (ccf/yr.)[1]	Total Rate Revenue	Commodity Rates[2]	
Ag. Irrig./Small Farms - Irrig./Raw Water (DA)				*($/ccf)*	*($/cf)*
Ag. Irrig. - (w/ & w/o residence) & Small Farms	*Uniform Rate*	*1,628,438*	*$879,959*	*$0.5404*	***$0.005404***
Adjustments *(per Board Direction)*[3]					
Use of Operating Reserve for Adjustment			**$468,152**		
Ag. Irrig. - (w/ & w/o residence) & Small Farms	*Uniform Rate*	*1,628,438*	*$411,807*	*$0.2529*	***$0.002529***

1. Assumes potable system use is 4,500 cf/mo. for the residential portion of consumption. The remaining consumption is assumed to be ag/raw water system.
2. These are Ag rates based only on direct assignment costs and only charged after 4,500 cf/mo. consumption.
3. Board directed to adjust the Ag/Raw/Small Farms rate to be consistent with single-family-potable rate increases. This involves the use of additional reserve funds, which is now reflected in the Financial Plan.

Figure 47. Calculation of Raw Water System Commodity Rates

Customer Class/Tier		Basic Charge or Flat Rate[2]	Water Consumption (ccf/yr.)[2]	Commodity Rates	
				($/ccf)	*($/cf)*
Metered Landscape Irrigation	*Uniform Rate*[1]	*(Same as Ag Irrig.)*	--	*$0.2529*	***$0.002529***
Raw Water - Flat Rates[3]	*1/2" flow*	*$983.00*	*3,888*	*$0.2529*	***$0.002529***
	1" flow	*$1,966.00*	*7,776*	*$0.2529*	***$0.002529***
	2" flow	*$3,933.00*	*15,552*	*$0.2529*	***$0.002529***
	4" flow	*$7,866.00*	*31,104*	*$0.2529*	***$0.002529***
Raw Water - Continuous Flow[1]	*Uniform Rate*	*N.A,*	--	*$0.2529*	***$0.002529***

1. Same as Ag Irrigation (DA).
2. Raw Water assumes the water consumption shown (applies to unmetered users).
3. Based on miner's inch calculations (129,600 cf/miner's inch) and assumes year-round usage.

5.3 Rate Design – Wastewater System

The District's wastewater rates will continue to rely on the current rate design with one exception. As previously mentioned in Section 1.2, the key change in the wastewater rate design is that the District Board approved reducing the number of commercial/industrial strength classes from five to three. The following include the results for this approach.

Calculating Fixed and Volumetric Charges for Wastewater – Compared to water customers, it is easier to present the calculations for wastewater fixed and variable charges together. Fixed charges are essentially the total fixed-charge revenue requirements for each customer class divided by the billing units (either dwelling units or accounts). Likewise, volumetric rates are the variable revenue requirements divided by the annual water use – average winter water use for residential customers and average monthly consumption for non-residential customers. Figure 48 summarizes these calculations, with the commercial/ industrial rates for the existing five strength categories. The commercial/industrial rates based on reducing the strength categories from five to three are presented in Figures 49 and 50.

Figure 48. Calculation of Wastewater Fixed and Variable Rates

Customer Class	Number of Dwelling Units / Accounts[1]	Annualized Winter Consumption (ccf)[3]	Net Revenue Requirements - Volumetric Rates	Net Revenue Requirements - Fixed Charges	Total Annual Revenue Requirement	Bi-monthly Fixed Charge Per Account	Volumetric Charge Per CF
Residential Customers							
Single Family Residential	23,768	1,426,080	$ 6,721,482	$ 9,460,125	$ 16,181,608	$ 66.34	$0.047133
Residential Flat Rate District Average [2]						141.75	
Multi Family Residential	5,137	246,576	1,162,176	$ 1,205,385	2,367,561	39.11	$0.047133
Total Residential	28,905	1,672,656	7,883,658	10,665,511	18,549,169		
Commercial-Industrial				*0.36966*	*Adjustment Factor*		
Commercial - Low	529	95,220	$ 802,486	$ 195,774	$ 998,259	$ 61.68	$0.084277
Commercial - Medium/Low	198	102,168	898,647	208,930	1,107,577	175.87	$0.087958
Commercial - Medium	33	4,752	86,235	20,415	106,650	103.11	$0.181471
Commercial - Medium/High	120	74,880	1,331,145	304,955	1,636,101	423.55	$0.177770
Commercial - High	-	0	0	0	-	-	$0.352735
Commercial Total:	**880**	**277,020**	**$ 3,118,513**	**$ 730,074**	**$ 3,848,587**		
Commercial (all categories)	*880*	*277,020*	*$ 3,118,513*		*3,848,587*	*$138.27*	*$0.112574*
Commercial without water service (per unit) [3]						*$198.33*	
Schools							
Schools (100% Allocated to Fixed Charg	16,490			313,896	313,896	$19.04	
Total:	**$ 87,505,551**	**$ 32,201,686**	**$ 11,002,171**	**$ 11,709,480**	**$ 22,711,651**		

1. Single and multi-family residential are based on the number of dwelling units and all other customers are based on the number of accounts.
2. Includes the single-family bi-monthly fixed charge plus assumed consumption of 1,600 cf charged at the single-family commodity rate.
3. Includes the commercial (all categories) bi-monthly fixed charge plus an assumed average flow for comm. - medium customers of 533 cf times the comm. (all categories) average commodity rate.

Figure 49. Calculation of Wastewater Fixed Charges – Commercial/Industrial Class

Alt. Commercial Fixed Charges	Net Revenue Reqts Allocated to Fixed Charges					No. of Dwell. Units, Accounts, Students[2]	Bi-mo. Fixed Charge Per Dwell. Unit or Acct.
Customer Class	Volume	BOD	TSS	Customer (100% Fixed)	Total		
Commercial-Industrial							
Commercial - Low (Unadjusted)	$ 333,823	$ 68,878	$ 65,952	$ 60,953	$ 529,606	529	$ 166.86
Adjusted "Low" Class	***$ 131,717***	***$ 27,177***	***$ 26,023***	***$ 24,051***	***$ 208,968***	***529***	***$ 65.84***
Commercial - Medium/Low	312,966	120,847	108,569	22,814	565,196	198	$ 475.75
Commercial - Medium	21,325	12,351	17,748	3,802	55,226	33	$ 278.92
New "Medium" Class (Unadjusted)	$ 334,290	$ 133,198	$ 126,317	$ 26,617	$ 620,422	231	$ 447.63
New "Medium" Class (Adjusted)	***$ 101,762***	***$ 40,547***	***$ 38,452***	***$ 8,102***	***$ 188,863***	***231***	***$ 136.26***
Commercial - Medium/High	$ 244,780	$ 319,989	$ 246,368	$ 13,827	$ 824,964	120	$ 1,145.78
Commercial - High	-	-	-	-	-	0	$ -
New "Medium/High" Class (Unadjusted)	$ 244,780	$ 319,989	$ 246,368	$ 13,827	$ 824,964	120	$ 1,145.78
New "Medium/High" Class (Adjusted)	***$ 46,314***	***$ 60,545***	***$ 46,615***	***$ 2,616***	***$ 156,090***	***120***	***$ 216.79***
Commercial without water service (per unit) [1]							***$ 314.51***
Adjusted Total:	**$ 279,793**	**$ 128,269**	**$ 111,090**	**$ 34,769**	**$ 553,921**		

1. Includes the adjusted comm/low bi-mo. fixed charge plus avg. flow for comm/low of 37,800 cf (Alloca. worksheet) times the adjusted comm/low commodity rate.

Figure 50. Calculation of Wastewater Variable Charges – Commercial/Industrial Class

Calculation of Commercial Vol. Rates	Net Revenue Reqts Allocated to Volumetric Rates				Annual Consumption (CCF/Yr.)	Volumetric Rates ($/CF)
Customer Class	Volume	BOD	TSS	Total		
Commercial-Industrial						
Commercial - Low (Unadjusted)	$ 333,823	$ 68,878	$ 65,952	$ 468,653	119,961	$ 0.03907
Adjusted "Low" Class	***$ 535,929***	***$ 110,579***	***$ 105,881***	***$ 789,292***	***119,961***	***$ 0.06580***
Commercial - Medium/Low	312,966	120,847	108,569	542,381	112,466	$ 0.04823
Commercial - Medium	21,325	12,351	17,748	51,424	7,663	$ 0.06711
New "Medium" Class (Unadjusted)	$ 334,290	$ 133,198	$ 126,317	$ 593,805	120,129	$ 0.04943
New "Medium" Class (Adjusted)	***$ 566,819***	***$ 225,849***	***$ 214,181***	***$ 1,025,363***	***120,129***	***$ 0.08536***
Commercial - Low	244,780	319,989	246,368	811,137	87,963	$ 0.09221
Commercial - Medium/Low	-	-	-	-	0	$ -
New "Medium/High" Class (Unadjusted)	$ 244,780	$ 319,989	$ 246,368	$ 811,137	87,963	$ 0.09221
New "Medium/High" Class (Adjusted)	***$ 443,245***	***$ 579,434***	***$ 446,121***	***$ 1,480,011***	***87,963***	***$ 0.16825***
Adjusted Total:	**$ 1,545,993**	**$ 915,861**	**$ 766,184**	**$ 3,294,666**		

5.4 Rate Design – Recycled Water System

Calculating Fixed Charges – Figure 51 shows the calculation of recycled water fixed charges. The same hydraulic capacity factors used for potable water customers are used for recycled water fixed charges. Note that the highlighted commercial/rec turf fixed charges are adjusted to 60 percent of the calculated charge, with the remaining 40 percent collected through volumetric rates. This was a rate design decision the District made to collect more revenue through the volumetric charges.

Figure 51. Calculation of Recycled Water Fixed Charges

Recycled Water Customer Class		Meter Size												Total Meters
		5/8"	3/4"	1"	1.5"	1.5" T	2"	2" T	3" T	4" T	6"	6" T	8" T	
Accounts/Equivalent Meters														
Commercial Landscape		-	29	35	33	28	15	36	2	2	-	-	-	180
Recreational Turf		-	-	2	2	1	1	4	-	-	-	1	1	12
Total Accounts		-	29	37	35	29	16	40	2	2	-	1	1	192
Hydraulic Capacity Factor [1]		*1.00*	*1.00*	*1.70*	*3.30*	*4.00*	*5.30*	*5.30*	*11.70*	*21.00*	*33.30*	*46.70*	*80.00*	
Total Equivalent Meters		-	29	63	116	116	85	212	23	42	-	47	80	812
	% of meters	*0.0%*	*3.6%*	*7.7%*	*14.2%*	*14.3%*	*10.4%*	*26.1%*	*2.9%*	*5.2%*	*0.0%*	*5.7%*	*9.8%*	*100.0%*
Bi-Monthly Fixed Service Charges														
Customer Costs ($/Acct/bi-mo.) [2]		$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	$ 19.05	
Capacity Costs ($/Acct/bi-mo.) [3]		$ -	$ 51.25	$ 87.13	$ 169.13	$ 205.00	$ 271.63	$ 271.63	$ 599.63	$ 1,076.27	$ 1,706.65	$ 2,393.41	$ 4,100.07	
Bi-Monthly Meter Charge		$ 70.30	$ 70.30	$106.18	$188.18	$224.05	$290.68	$290.68	$ 618.69	$ 1,095.32	$ 1,725.70	$2,412.46	$ 4,119.12	
Annual Revenue from Bi-Monthly Meter Charges														
Customer Costs	$ 21,946	$ -	$ 3,315	$ 4,229	$ 4,001	$ 3,315	$ 1,829	$ 4,572	$ 229	$ 229	$ -	$ 114	$ 114	
Capacity Costs	$ 249,786	$ -	$ 8,918	$ 19,342	$ 35,517	$ 35,671	$ 26,076	$ 65,191	$ 7,196	$ 12,915	$ -	$ 14,360	$ 24,600	
Fixed Costs Recovered Bi-monthly	$ 271,732	$ -	$ 12,232	$ 23,571	$ 39,517	$ 38,985	$ 27,905	$ 69,763	$ 7,424	$ 13,144	$ -	$ 14,475	$ 24,715	
Comm./Rec Turf Fixed Charges (as % of Fixed): (Rest Collected in Vol. Rate)	***60%***	***$42.18***	***$42.18***	***$63.71***	***$112.91***	***$134.43***	***$174.41***	***$174.41***	***$371.21***	***$657.19***	***$1,035.42***	***$1,447.48***	***$2,471.47***	
Annual Revenue from Bi-Monthly Meter Charges														
Comm. Landscape. Fixed Costs Recovered	$ 218,946	$ -	$ 12,232	$ 22,297	$ 37,259	$ 37,641	$ 26,161	$ 62,787	$ 7,424	$ 13,144	$ -	$ -	$ -	
Rec Turf Fixed Costs Recovered	$ 52,786	$ -	$ -	$ 1,274	$ 2,258	$ 1,344	$ 1,744	$ 6,976	$ -	$ -	$ -	$ 14,475	$ 24,715	

1. Source: "Water Meters - Selection, Installation, Testing, and Maintenance," AWWA, Manual M6, Fourth Edition, Table 5-3, Displacement Meters and Class I Turbine Meters.
2. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
3. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.
4. Assumes that Fire Protection costs for Multi-Family and Commercial/Industrial are allocated based on equivalent meters.
** Needed to offset reduction in RW Commercial Fixed charge to match Rec Turf (Potable) Fixed Charges.*

Figure 52 shows the calculated fixed charges for dual plumbed customers. Since dual plumbed customers also receive potable water services, this fixed charge is deducted from their potable water fixed charge.

Figure 52. Calculation of Recycled Water Fixed Charge – Dual-Plumbed Customers

Recycled Water Customer Class	Number of Customers	Dual-Plumbed Basic Charge *($/bi-mo.)*	Rate Revenue
Total Dual-Plumbed - Basic Charges	5,474	**$31.16**	$ 1,023,522

Figure 53 summarizes the calculation of the recycled water volumetric rate. As previously noted, the District Board approved of a combined uniform rate for Rec Turf, Commercial Landscape, and Dual Plumbed customers vs. different volumetric rates for each of these customer classes.

Figure 53. Calculation of Recycled Water Volumetric Rates

Rec Turf/Comm. Landscape/Dual Plumbed Customers	Target Vol. Revenue Req't	Water Consumption *(ccf/yr.)* [2]	Commodity Rates	
			($/ccf)	*($/cf)*
Rec Turf				
40% of Fixed Charge Revenue[1]	$44,158			
Commodity Charge Revenue	$257,946			
Recovered in Volumetric Rate	$302,105	233,112		
Commercial Landscape				
40% of Fixed Charge Revenue[1]	$64,535			
Commodity Charge Revenue	$498,359			
Recovered in Volumetric Rate	$562,893	450,378		
Dual-Plumbed Residential				
Commodity Charge Revenue	$1,186,576			
Recovered in Volumetric Rate	$1,186,576	1,072,336		
Totals	**$2,051,574**	**1,755,826**	**$1.168**	**$0.01168**

1. Adjustment to 40% was made to collect more revenue through the volumetric charges.
2. From Recycled Water Commodity Allocation Factors table.

6. Proposed Rates and Customer Bill Impacts

The District's proposed rates are determined based on industry practices and cost of service analysis and recover revenue requirements reflecting the proposed rate increases. However, because of the District's voluntary use of property tax revenues to reduce the District's utility rates, the revenue recovered from rates is less than the actual cost of service. That is, rates are below the actual cost of service as defined by Prop 218 due to the use of these property tax revenues.

In the case of the water utility, the 2024 revenue from existing rates is $40.2 million compared to the total revenue requirements of $63.4 million (a difference of $23.2 million) as previously shown in Figure 6. Therefore, the revenue collected from rates was reduced far below the actual cost of service. Appendix E shows the difference between single family tiered rates with and without the use of property tax revenues.

6.1 Current and Proposed Water Rates

The District's water rate structure includes fixed charges consisting of a bi-monthly base charge that increases with the size of the meter, and variable charges that are either multi-tiered volumetric rates (for single-family customers) or a uniform (i.e., single-tier) commodity rate for all other customer classes.

The current rates are those developed by the District in the 2020 rate study (effective on January 1, 2023). The proposed rates will reflect the District's 2024 budget and the District's current 50/50 fixed/variable cost allocation as confirmed by the Board during rate study workshops.

Figure 54 and Figure 55 present the proposed base charges for the potable water customers. As previously noted, agricultural customers have unique cost allocations related to water-use characteristics and require special consideration. As a result, different rates were developed for agricultural customers. The commodity charges for both potable and agricultural customers are shown in Figure 56. The base charges for agricultural customers are shown in Figures 57.

Figure 54. Current and Proposed Single-Family Bi-Monthly Base Water Charges

Base Charges	Current Rates	Proposed Rates				
		2024	2025	2026	2027	2028
Water - Bi-Monthly Base Charges						
Single Family Residential						
5/8" and 3/4" meters (Includes Ag. Irrig. *w/ Resid. & Small Farms)* [1]	$69.93	$77.88	$87.23	$97.69	$109.42	$122.55
1" Residential with Private Fire Service	$69.93	$77.88	$87.23	$97.69	$109.42	$122.55
1"	$103.82	$116.74	$130.74	$146.43	$164.00	$183.68
1 1/2"	$181.32	$205.54	$230.21	$257.83	$288.77	$323.43
1 1/2"T	$215.23	$244.40	$273.73	$306.57	$343.36	$384.57
2"	$278.20	$316.56	$354.54	$397.09	$444.74	$498.11
2"T	$278.20	$316.56	$354.54	$397.09	$444.74	$498.11
3"	$561.63	$616.29	$690.24	$773.07	$865.84	$969.74
3"T	$588.15	$671.79	$752.41	$842.70	$943.82	$1,057.08
4"	$798.63	$949.32	$1,063.24	$1,190.83	$1,333.73	$1,493.77
Single Family Dual Plumbed Residential [2]	$52.66	$46.72	$52.32	$58.60	$65.64	$73.51

1. Larger meter sizes for Ag Irrig/ w/ Resid. and Small Farms are shown below in Ag. Irrig. w/ Resid. and Small Farms.
2. This is the Single Family base charge less dual-plumbed recycled water bi-monthly base charge of $31.16

Figure 55. Current and Proposed Multi-Family/Commercial /Landscape, and Recreational Turf Bi-Monthly Base Water Charges

Base Charges	Current Rates	Proposed Rates 2024	2025	2026	2027	2028
Water - Bi-Monthly Base Charges						
Multi-Family, Commercial/Landscape & Rec Turf						
5/8" and 3/4" meters	$75.25	$81.15	$90.89	$101.80	$114.01	$127.70
1"	$112.88	$122.30	$136.97	$153.41	$171.82	$192.44
1 1/2"	$198.89	$216.34	$242.30	$271.38	$303.95	$340.42
1 1/2"T	$236.53	$257.49	$288.39	$322.99	$361.75	$405.16
2"	$306.40	$333.90	$373.97	$418.84	$469.10	$525.40
2"T	$306.40	$333.90	$373.97	$418.84	$469.10	$525.40
3"	$596.68	$651.30	$729.46	$816.99	$915.03	$1,024.83
3"T	$650.43	$710.08	$795.29	$890.72	$997.61	$1,117.32
4"	$919.21	$1,003.97	$1,124.44	$1,259.38	$1,410.50	$1,579.76
4"T	$1,150.37	$1,256.71	$1,407.52	$1,576.42	$1,765.59	$1,977.46
6"	$1,811.55	$1,979.68	$2,217.24	$2,483.31	$2,781.31	$3,115.07
6"T	$2,531.90	$2,767.30	$3,099.38	$3,471.31	$3,887.86	$4,354.41
8"T	$4,321.95	$4,724.61	$5,291.56	$5,926.55	$6,637.74	$7,434.27
10"T	$6,844.89	$7,469.54	$8,365.88	$9,369.79	$10,494.16	$11,753.46
12"T	$8,562.02	$9,820.66	$10,999.14	$12,319.03	$13,797.32	$15,452.99

Figure 56. Current and Proposed Volumetric Water Rates

Commodity Charges	Current Rates	Proposed Rates 2024	2025	2026	2027	2028
Water						
Single Family Residential						
0 - 1,800 cf	$0.019912	$0.023293	$0.026089	$0.029219	$0.032726	$0.036653
1801 - 4,500 cf	$0.024033	$0.027998	$0.031358	$0.035121	$0.039336	$0.044056
Above 4,500 cf	$0.028194	$0.034553	$0.038699	$0.043343	$0.048544	$0.054369
Multi-Family, Commercial/Landscape, Rec Turf						
All usage	$0.023294	$0.027526	$0.030830	$0.034529	$0.038673	$0.043313
Agricultural Irrigation (with residence) and Small Farms						
0 - 4,500 cf (*Single Family Rates Apply*)	*(See Single-Family Rates)*					
Above 4,500 cf	$0.002222	$0.002529	$0.002832	$0.003172	$0.003553	$0.003979
Agricultural Irrigation (without residence) and Raw Metered						
All usage	$0.002222	$0.002529	$0.002832	$0.003172	$0.003553	$0.003979
Raw Water Rates						
Metered Landscape Irrigation/ Seasonal Continuous Flow						
All usage	$0.002222	$0.002529	$0.002832	$0.003172	$0.003553	$0.003979

Figure 57. Current and Proposed Agricultural and Raw Water Bi-Monthly Base Charges

Base charges	Current Rates	Proposed Rates 2024	2025	2026	2027	2028
Agricultural Irrigation (with residence) and Small Farms						
5/8" and 3/4" meters[1]	$69.93	$77.88	$87.23	$97.69	$109.42	$122.55
1"	$77.13	$104.59	$117.14	$131.20	$146.94	$164.57
1 1/2"	$97.47	$129.73	$145.29	$162.73	$182.26	$204.13
1 1/2"T	$106.37	$140.73	$157.61	$176.53	$197.71	$221.43
2"	$122.90	$161.15	$180.49	$202.15	$226.40	$253.57
2"T	$122.90	$161.15	$180.49	$202.15	$226.40	$253.57
3"	$177.63	$245.99	$275.51	$308.57	$345.60	$387.07
3"T	$204.27	$261.70	$293.10	$328.28	$367.67	$411.79
4"	$267.86	$340.25	$381.09	$426.82	$478.03	$535.40
4"T	$322.53	$407.81	$456.75	$511.56	$572.95	$641.70
6"	$404.21	$601.06	$673.18	$753.97	$844.44	$945.77
6"T	$649.30	$811.58	$908.97	$1,018.05	$1,140.22	$1,277.04
8"T	$1,072.70	$1,334.76	$1,494.93	$1,674.32	$1,875.24	$2,100.27
10"T	$1,698.90	$2,068.46	$2,316.68	$2,594.68	$2,906.04	$3,254.77
12"T	$2,175.08	$2,696.90	$3,020.53	$3,382.99	$3,788.95	$4,243.63
Agricultural Irrigation (without residence) and Raw Metered						
5/8" and 3/4" meters	$19.02	$21.30	$23.86	$26.72	$29.93	$33.52
1"	$25.67	$32.30	$36.18	$40.52	$45.38	$50.82
1 1/2"	$48.28	$57.44	$64.33	$72.05	$80.70	$90.38
1 1/2"T	$57.16	$68.43	$76.65	$85.84	$96.15	$107.68
2"	$73.69	$88.86	$99.52	$111.47	$124.84	$139.82
2"T	$73.69	$88.86	$99.52	$111.47	$124.84	$139.82
3"	$111.65	$173.70	$194.54	$217.89	$244.03	$273.32
3"T	$155.07	$189.41	$212.14	$237.60	$266.11	$298.04
4"	$218.65	$267.96	$300.12	$336.13	$376.47	$421.65
4"T	$273.34	$335.52	$375.78	$420.88	$471.38	$527.95
6"	$429.71	$528.77	$592.22	$663.28	$742.88	$832.02
6"T	$600.10	$739.29	$828.01	$927.37	$1,038.65	$1,163.29
8"T	$1,023.50	$1,262.47	$1,413.97	$1,583.64	$1,773.68	$1,986.52
10"T	$1,620.96	$1,996.17	$2,235.71	$2,504.00	$2,804.48	$3,141.02
12"T	$2,125.87	$2,624.61	$2,939.57	$3,292.31	$3,687.39	$4,129.88
Raw Water Rates						
Raw Water Irrigation[2]						
Raw Water Year Round - 1/2" Flow	$143.96	$163.83	$183.49	$205.51	$230.17	$257.79
Raw Water Year Round - 1" Flow	$287.91	$327.67	$366.99	$411.03	$460.35	$515.59
Raw Water Year Round - 2" Flow	$575.82	$655.50	$734.16	$822.26	$920.93	$1,031.44
Raw Water Year Round - 4" Flow	$1,151.64	$1,311.00	$1,468.32	$1,644.52	$1,841.86	$2,062.88
Raw Water Year Round - >4" Flow (per inch	$287.91	$327.67	$366.99	$411.03	$460.35	$515.59

1. This is the same as SFR base charge and includes customer costs; larger meters include both the SFR base charge and the add'l capacity costs exceeding 3/4" meter capacity costs.
2. Assumes a flat rate for unmetered consumption. If metered, the Ag irrigation/raw metered commodity rates are used. Larger meter sizes for Ag Irrig/ w/ Resid. and Small Farms are shown below in Ag. Irrig. w/ Resid. and Small Farms

6.2 Current and Proposed Wastewater Rates

The District's current and proposed wastewater rates include fixed bi-monthly, or base charges, and commodity rates. The volume-based rates are applied to average winter water consumption for Single Family Residential customers and to monthly water use for commercial-industrial customers.

The current rates are those developed by the District in the 2020 rate study (effective on January 1, 2023). The proposed wastewater rates will reflect the District's 2024 budget and continue the District's current 50/50 fixed/variable wastewater cost allocation which the Board confirmed during rate study workshops. The Board also agreed that the commercial-industrial customer classes should be simplified by reducing them from five to three classes. Figure 58 presents the District's current and proposed wastewater base and commodity charges.

Figure 58. Current and Proposed Wastewater Base and Commodity Charges

Wastewater Base and Commodity Charges	Current Rates	Proposed Rates 2024	2025	2026	2027	2028
Wastewater Base Charges (Bi-Monthly)						
Residential Flat Rate District Average[1]	$135.32	$141.75	$146.00	$150.38	$154.89	$159.54
Single Family Residential	$69.58	$66.34	$68.33	$70.38	$72.49	$74.66
Multi-Family Residential (flat rate per unit)	$31.31	$39.11	$40.28	$41.49	$42.73	$44.02
Commercial (all categories)	*$70.46*	-	-	-	-	-
Commercial without water service (flat rate per unit) [2]	*$127.13*	-	-	-	-	-
Commercial without water service (flat rate per unit)[3]	-	$314.51	$323.95	$333.67	$343.68	$353.99
Commercial Fixed Charges						
Commercial - Low	-	$65.84	$67.81	$69.85	$71.94	$74.10
Commercial - Medium	-	$136.26	$140.35	$144.56	$148.90	$153.37
Commercial - Medium/High	-	$216.79	$223.30	$229.99	$236.89	$244.00
Schools, per student and staff (billed annually)	$13.09	$19.04	$19.61	$20.19	$20.80	$21.42
Wastewater Commodity Rates ($/CF)						
Single Family Residential - All Usage	$0.041091	$0.047133	$0.048547	$0.050003	$0.051503	$0.053048
Multi-Family Residential - All usage	$0.032315	$0.047133	$0.048547	$0.050003	$0.051503	$0.053048
Commercial/Industrial						
Commercial - Low	$0.049278	-	-	-	-	-
Commercial - Medium/Low	$0.072570	-	-	-	-	-
Commercial - Medium	$0.106231	-	-	-	-	-
Commercial - Medium/High	$0.167191	-	-	-	-	-
Commercial - High	$0.364214	-	-	-	-	-
Commercial Commodity Rates						
Commercial - Low	*N.A.*	$0.065795	$0.067769	$0.069802	$0.071897	$0.074053
Commercial - Medium	*N.A.*	$0.085355	$0.087916	$0.090553	$0.093270	$0.096068
Commercial - Medium/High	*N.A.*	$0.168254	$0.173301	$0.178500	$0.183855	$0.189371

1. This rate includes the single-family bi-monthly fixed charge plus an assumed consumption of 1,600 cf charged at the single-family commodity rate.
2. The proposed 2024 rate includes the commercial - low bi-monthly fixed charge plus an assumed average flow of 1,600 cf times the commercial - low commodity rate.
3. Includes the adjusted comm. - low bi-mo. fixed charge plus the average flow for comm. - low customers of 37,800 cf times the adjusted comm. - low commodity rate.

6.3 Current and Proposed Commercial Recycled Water Rates

The District's current and proposed recycled water rates only apply to residential dual-plumbed and a limited number of commercial landscape and recreational turf customers. Since there is a District benefit for customers to use recycled water instead of potable water, this fixed monthly charge is deducted from their potable water bill. Additionally, the District augments the recycled water supply with potable water during the summer months. Therefore, the recycled commodity charges include the higher costs of the potable water used to supplement recycled water demand during peak periods.

Current and proposed dual-plumbed, commercial landscape and recreational turf customers have both fixed bi-monthly and commodity rates. The District's current and proposed recycled water rates for these customers are summarized in Figure 59.

Figure 59. Current and Proposed Dual-Plumbed, Commercial Landscape and Recreational Turf Recycled Rates

Recycled Water Base and Commodity Charges	Current Rates	Proposed Rates 2024	2025	2026	2027	2028
Recycled Water Base Charges (Bi-Monthly)						
Single Family Dual Plumbed Residential	$17.37	$31.16	$32.10	$33.06	$34.05	$35.07
Commercial Landscape/Recreational Turf						
5/8" and 3/4" meters	$38.70	$42.18	$43.45	$44.75	$46.09	$47.47
1"	$56.74	$63.71	$65.62	$67.59	$69.61	$71.70
1 1/2"	$98.02	$112.91	$116.29	$119.78	$123.38	$127.08
1 1/2"T	$116.07	$134.43	$138.47	$142.62	$146.90	$151.30
2"	$149.61	$174.41	$179.64	$185.03	$190.58	$196.30
2"T	$149.61	$174.41	$179.64	$185.03	$190.58	$196.30
3"	$288.91	$340.46	$350.67	$361.19	$372.03	$383.19
3"T	$314.70	$371.21	$382.35	$393.82	$405.63	$417.80
4"	$443.68	$524.96	$540.71	$556.93	$573.64	$590.85
4"T	$554.59	$657.19	$676.91	$697.21	$718.13	$739.67
6"	$871.88	$1,035.42	$1,066.48	$1,098.48	$1,131.43	$1,165.38
6"T	$1,217.55	$1,447.48	$1,490.90	$1,535.63	$1,581.70	$1,629.15
8"T	$2,076.52	$2,471.47	$2,545.61	$2,621.98	$2,700.64	$2,781.66
10"T	$3,288.72	$3,907.52	$4,024.75	$4,145.49	$4,269.85	$4,397.95
12"T	$4,177.99	$5,137.54	$5,291.67	$5,450.42	$5,613.93	$5,782.35
Recycled Water Commodity Rates ($/CF)						
Dual Plumbed Residential						
0 - 3,000 cf *(50% of Potable Tier 1)*	$0.009956	*Replaced by Uniform Volumetric Rate*				
3,001 - 4,500 cf *(70% of Potable Tier 2)*	$0.016820					
Above 4,500 cf *(90% of Potable Tier 3)*	$0.025375					
Commercial Landscape						
All Usage	$0.007826					
Recreational Turf						
All Usage	$0.008346					
Recycled Uniform Rate	*N.A.*	**$0.011684**	**$0.012035**	**$0.012396**	**$0.012768**	**$0.013151**

6.4 Customer Bill Impacts

Bi-Monthly Water Bills. The impact of the rate changes on customer bills will differ based on the amount of water used and whether the customer also has wastewater and/or recycled water service. Figure 60 and Figure 61 show the existing and proposed bi-monthly bills through 2028. Figure 62 shows the bi-monthly bills for low-, medium-, and high-usage residential customers.

Figure 60. Bi-Monthly Water Bill Comparison: Single Family Customers

Single-Family Water Bills	2023	2024	2025	2026	2027	2028
Typical Bi-Mo. Bill (2,500 cf)	$122.59	$139.41	$156.14	$174.87	$195.86	$219.36
Bi-Monthly Increases		$16.81	$16.73	$18.74	$20.98	$23.50
% Increase		13.7%	12.0%	12.0%	12.0%	12.0%

Figure 61. Bi-Monthly Water Bill Comparison: Single-Family Customers

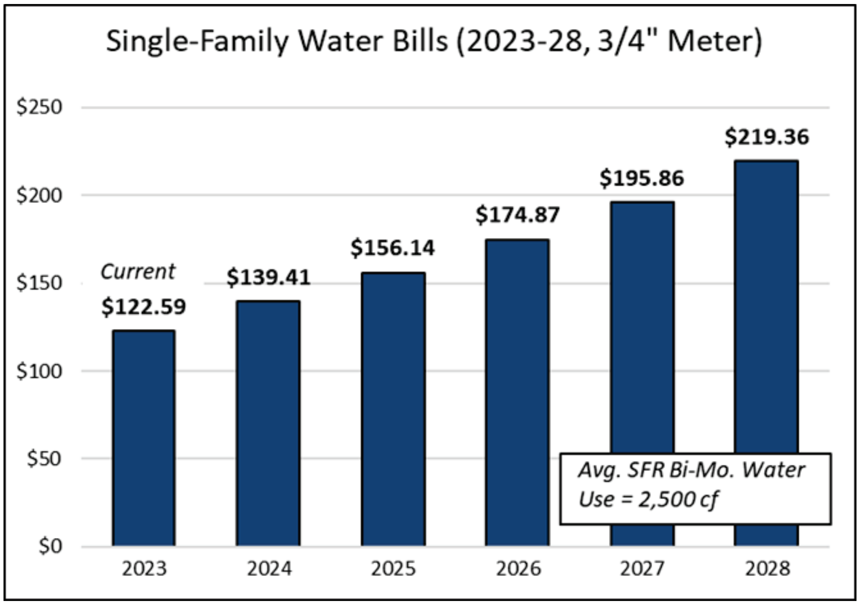
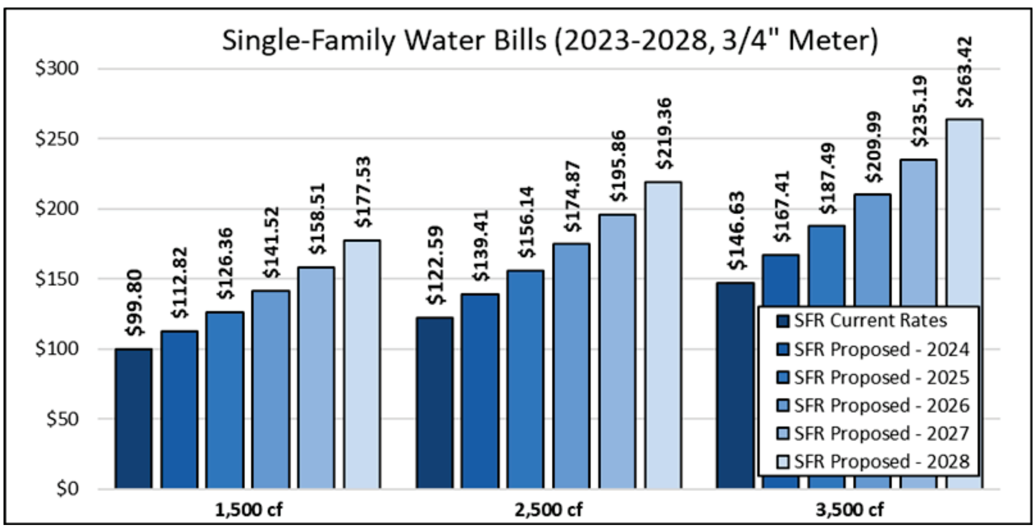


Figure 62. Bi-Monthly Water Bill Comparison: Single-Family Customers



Bi-Monthly Wastewater Bills. The impact of the rate changes on customer wastewater bills will differ based on the amount of water used and whether the customer also has water and/or recycled water service. Figure 63 and Figure 64 show the existing and proposed bi-monthly bills through 2028. Figure 65 shows the bi-monthly wastewater bills for low-, medium-, and high-usage residential customers. *(Note that the consumption numbers reflect winter consumption, not average annual consumption.*)

Figure 63. Bi-Monthly Wastewater Bill Comparison: Single-Family Customers

Single-Family Wastewater Bills	2023	2024	2025	2026	2027	2028
Typical Bi-Mo. Bill	$110.67	$113.47	$116.87	$120.38	$123.99	$127.71
Bi-Monthly Increases		$2.80	$3.40	$3.51	$3.61	$3.72
% Increase		2.5%	3.0%	3.0%	3.0%	3.0%

Figure 64. Bi-Monthly Wastewater Bill Comparison: Single-Family Customers

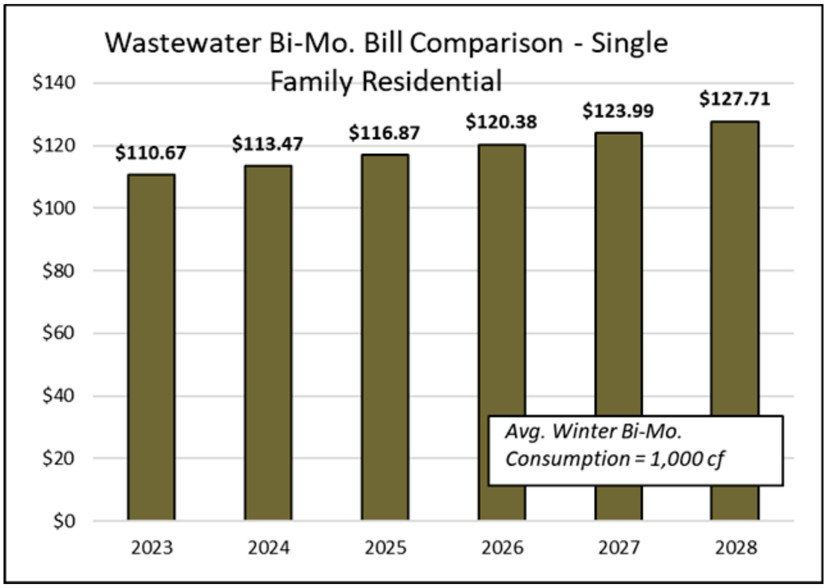


Figure 65. Bill Comparison: Single-Family Residential Wastewater Rates

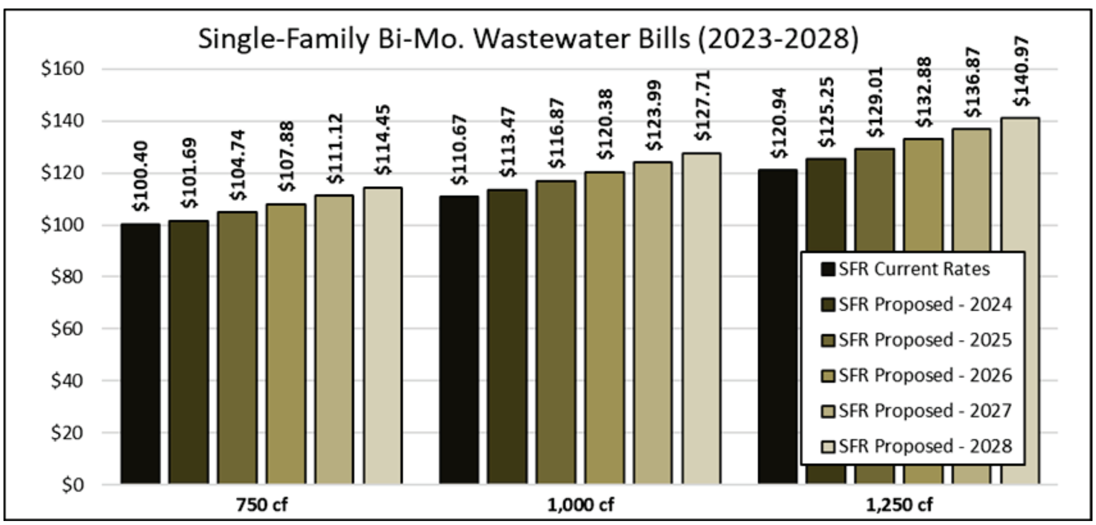


Figure 66 presents the projected net increase in the combined bi-monthly bills for water and wastewater residential customers with low-, average, and high water consumption levels. Figure 67 shows the change in dollars and percent for bi-monthly bills for residential customers receiving water, wastewater, and recycled water services.

Figure 66. Bill Comparison: Combined Single-Family Residential Water & Wastewater Bills

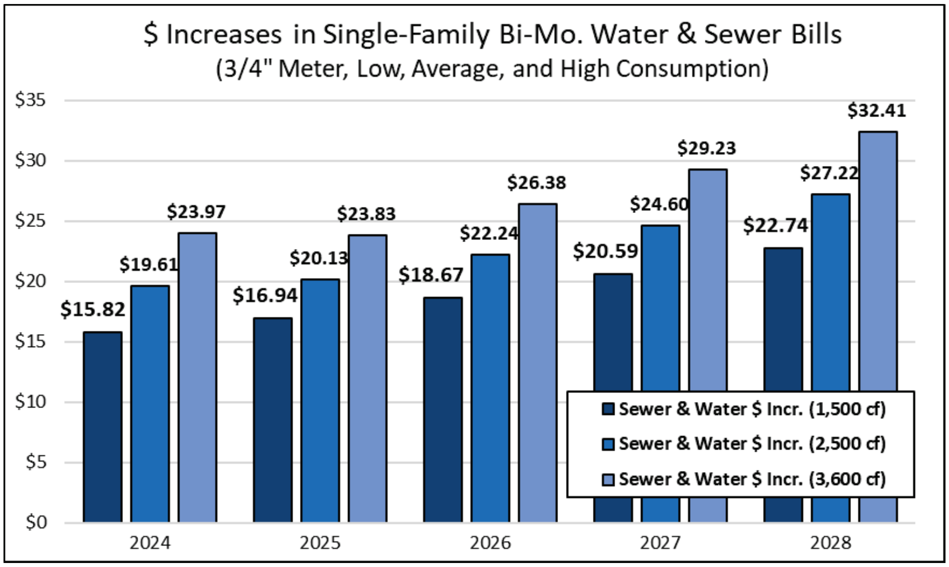
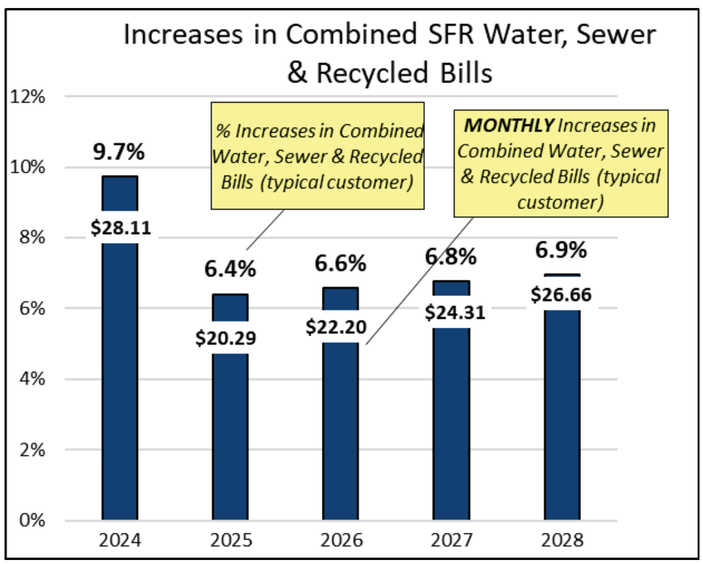


Figure 67. Bill Comparison: Single-Family Residential Dual-Plumbed (Water, Wastewater, and Recycled Water) Bills



6.5 Regional Comparison of Customer Bills

Figures 68 and 69 compare the District's proposed Single Family Residential customer bills for water and wastewater with other agencies in the region. Figure 68 indicates that the current average water bill for a District customer is in the lower one third of neighboring utilities and that the proposed water bill is still below the halfway mark. Figure 69 indicates that both the current and proposed customer wastewater bills below the average compared to neighboring utilities that, of agencies that are required by law to treat their wastewater to "tertiary-level" (near-drinking water) standards, the District is on the lower end.

Figure 68. Regional Comparison of Bi-Monthly Water Bills

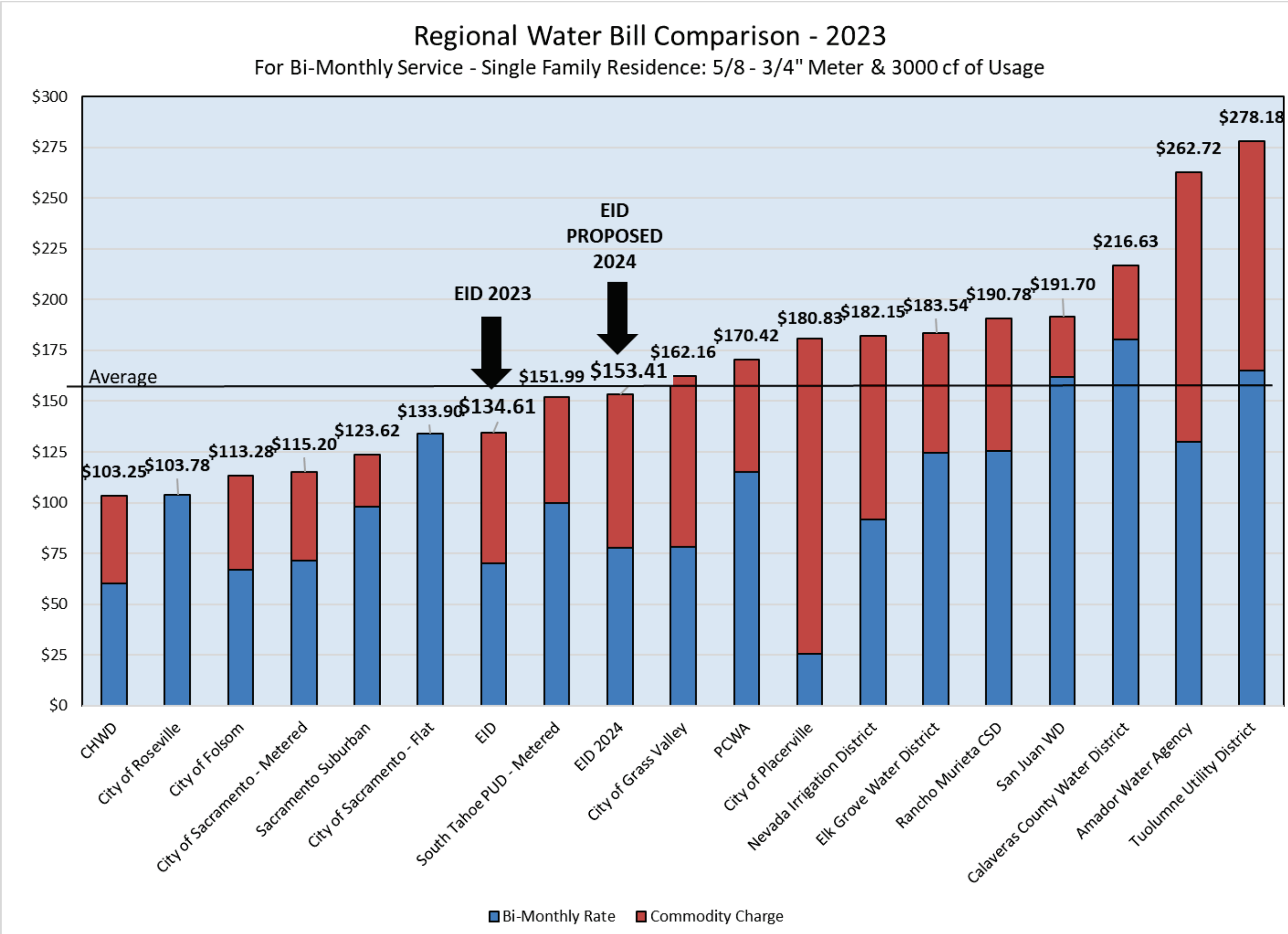
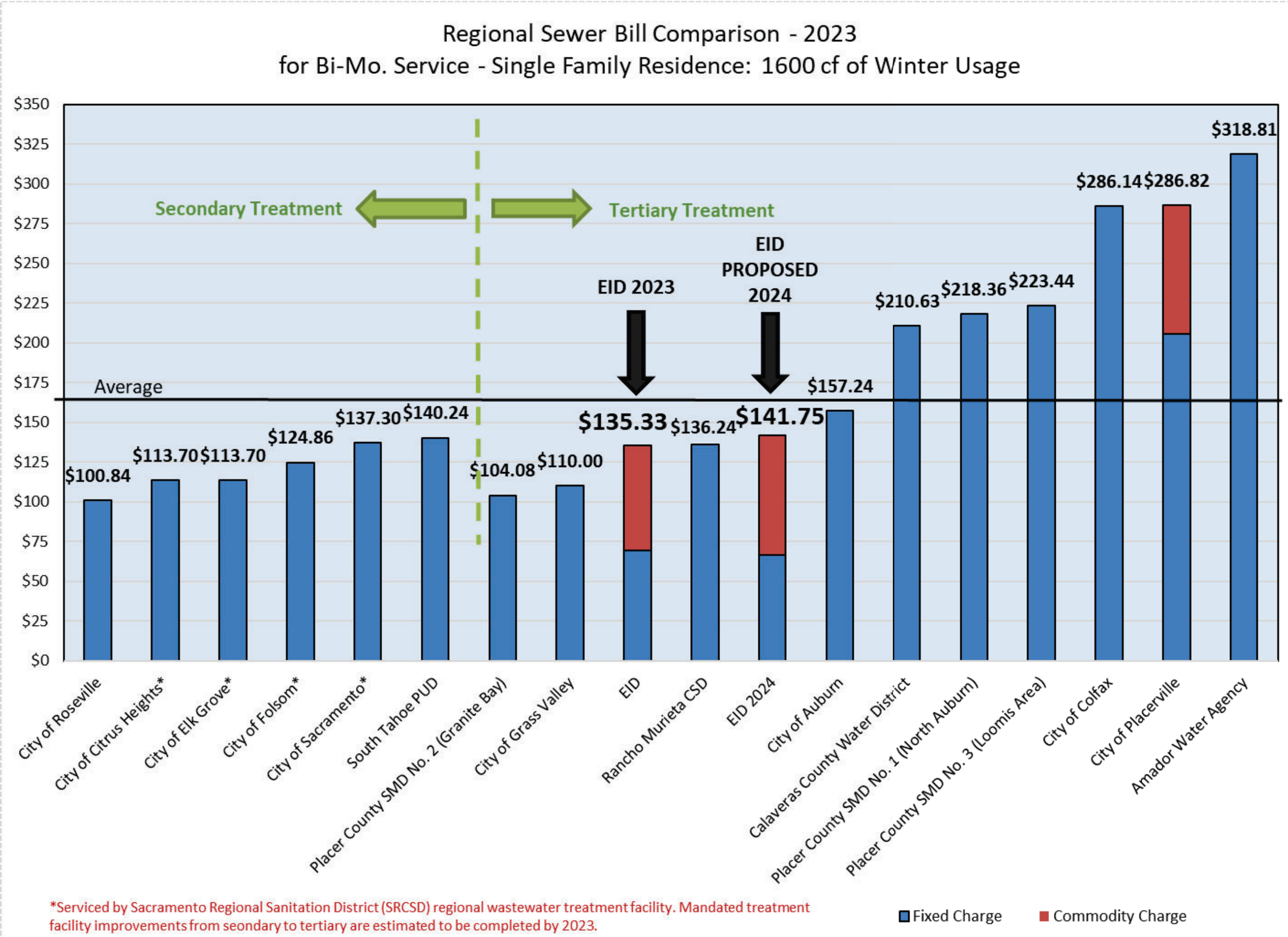


Figure 69. Regional Comparison of Wastewater Bills



** Agencies served by Sacramento Regional Sanitation District*

7. Recommendations

7.1 Recommendations

This COS Study update report has incorporated input from the District staff and Board members and public comments received over the nine-month period during which this study was conducted. The Board accepted the results during the October 23, 2023, meeting, along with the various assumptions discussed previously in this report. At that time, the Board directed staff to complete this study report and issue Prop 218 notices to District customers.

Assuming there is not a majority protest of the proposed rates as a result of the Prop 218 process, NBS recommends the District proceed with adopting and implementing these rates, with an implementation date of January 1, 2024.

NBS also recommends that the District closely track the revenues received from the new rates over the next few years to ensure that revenues closely track those projected in this study.

7.2 Principal Assumptions and Considerations

In preparing this report and the opinions and recommendations included herein, NBS has relied on several principal assumptions and considerations regarding financial matters, conditions, and events that may occur in the future. The information and assumptions, including District's operating budgets, capital budgets, and related information were provided by sources we believe to be reliable.

While we believe it is reasonable to use such information and assumptions for the purpose of this report, some assumptions may not materialize and capital costs may be higher than anticipated and could vary significantly due to unanticipated inflation or other circumstances. Because of this, the District should closely monitor future revenues, costs, and capital plans to determine when there are significant variances from the results shown in this report and take appropriate action to reconcile differences as needed, including adopting additional rate increases and/or reducing capital expenditures.

Technical Appendices

These Appendices contain:

- Appendix A: Principles of Guiding the Rate-Setting Process
- Appendix B: Common Rate Study Terminology and Abbreviations
- Appendix C: Rate Study Cost-of-Service Terminology
- Appendix D: Allocating Costs to Direct Assignment (DA) Customers
- Appendix E: Single-Family Tiered Rates Excluding Property Tax Revenues

Appendix A. Principles for Guiding the Rate-Setting Process

The following principles were first adopted by the Board on September 1, 2010, and readopted on November 12, 2019. The Board subsequently reviewed the principles on January 23, 2023 and concurred with staff's recommendation to follow the principles during the 2023 COSA.

Principle 1 – Establish rates in compliance with all applicable Federal, State, and local laws and regulations.

Discussion: Certain Federal, State, and local laws and regulations have an impact on processes involved in setting the District's rate structure – most notably Prop 218. It is imperative that the rate structure be established in compliance with these laws and regulations.

Advantages of the Principle: Clearly states the District's intent to establish rates in compliance with applicable Federal, State, and local laws and regulations.

Disadvantages of the Principle: None.

Principle 2 – Establish rates that are fair and equitable within the limitations of reasonable and attainable data and the District's administrative systems, personnel, and finances.

Policy Statement: The Board recognizes the need for reasonable cost allocation among commodities as well as the need to provide an easily understood rate structure for its customers. Rates should be generally perceived by the District's customers as fair, reasonable, and equitable to all customers.

Discussion: This principle highlights the importance of the customer perception of fairness and equity to the Board, while also recognizing that it is not practical to promise absolute equity among all customers and customer classes.

Advantages of the Principle: The advantage of this principle is that it reinforces the Board's priority of treating all customers fairly. It also underscores the importance of a more "District-wide" perception of fairness and equity as opposed to pacifying the "squeaky wheel." Finally, it acknowledges the practical obstacles that prevent perfect equity.

Disadvantage of the Principle: This principle ultimately does not clearly define the terms "fair and equitable" and will still require the Board to apply its discretion and judgment.

Principle 3 – Attempt to make rates simple to understand for the public and reasonable to administer.

Policy Statement: Rates should be easily understood by customers and cost-efficient for the District to administer. At the same time, all rates must conform to any legal requirements placed upon the District.

Discussion: For 15years, the District's policy orientation has been to simplify its rate structure and the process of administering it. This principle is consistent with those historical efforts. Customer education and clarity of customer bills should be considered part of this principle.

Advantages of the Principle: Creating rates that are easy for customers to understand will minimize rate-related customer service issues. If customers understand the basis for their bills, they will have a greater ability to comprehend their billing and conclude that it is fair. This principle is consistent with the District's 2008 Board decision to adopt a District-wide rate structure.

Disadvantages of the Principle: There are tensions between "fairness and equity" and simplicity of the rate structure. Simplifying the rate structure does not always provide a maximum degree of fairness and equity. However, from the customer perspective, rates that are simple to understand may be more important than a higher degree of equity, as long as any resulting inequities are not viewed as "gross inequities."

Principle 4 – Establish stable and predictable rates over time to the extent possible within the District's overall financial plan.

Policy Statement: Rates should be stable and predictable over time which requires a balance between generating sufficient revenue for utility operations, funding capital improvements, and improving customer perception of the rates as fair and equitable.

Discussion: It is imperative for the District to establish rates that generate adequate revenues from year to year, regardless of weather and consumption characteristics. Large and unexpected year-to-year rate changes impose financial hardships on customers and promote customer perceptions of the District as arbitrary and mismanaged. This principle recognizes the need to establish an appropriate balance between minimizing large rate adjustments without discouraging annual smaller systematic rate adjustments.

Advantages of the Principle: The principle attempts to stabilize the cash flow of the District and, at the same time, improve customer perceptions of fair and equitable rates and management of the District.

Disadvantages of the Principle: It is difficult to define "stable" as this term has different meanings for different people. Customers may construe stable to mean no increases from year to year.

Principle 5 – Make rates cost-based to the extent possible.

Policy Statement: Rates should be cost-based to the extent possible, meaning that other rate-setting policies of the District and the financial impacts to customers must also be considered. Fundamentally, "cost-based" rates are rates that meet the District's overall revenue requirements. From the customer perspective, "cost-based" can be defined as the fair and reasonable allocation of costs to customers based on the degree to which services to different groups of customers cause the District to incur costs.

Discussion: Cost-based rates are generally recognized as being the most fair and equitable. However, this principle again needs to strike a balance between establishing cost-based rates in an excessively detailed and confusing manner, and establishing overly simplified rates. The District should strive for rates that satisfy both the District revenue requirements and the customer's perception of fairness and equity.

Advantages of this Principle: Striving for cost-based rates is an important element in achieving rates that will generally be perceived as fair and equitable and also meet the District's financial needs. Although cost responsibility among classes of service is not essential to the financial stability of the District, it is important if customers are to perceive rates as fair and equitable, as well as a requirement of state law (i.e., Prop 218).

Disadvantages of the Principle: A commitment to cost-based rates may imply different levels of refinement and detail in the District's rates for various customer groups. Therefore, this principle could be misconstrued as requiring an excessively detailed and costly approach to establish rates.

Principle 6 – Set rates to promote efficient customer use.

Policy Statement: Rates should recognize the value of water and of sewer capacity as limited resources, and while the District's rate structure should discourage unreasonable use, it should encourage efficient use of the resources.

Discussion: This principle is intended to recognize the limited resources of the District and the environment. In light of the State Water Plan (20 x 2020) and the California Urban Water Conservation Council's Best Management Practice of collecting 70 percent of water rate revenue from consumptive rates (BMP #11), the District's rates should encourage more efficient use of water. Similarly, the District's sewer capacity and recycled water supplies are finite, and facility expansions to enhance those resources are very expensive. This principle is not intended to be applied so as to discourage reasonable uses of the resources. By attempting to price commodities roughly equal to their true costs, the District will be encouraging efficient use of its limited resources.

Advantages of the Principle: This principle recognizes the multiple uses of our natural resources and makes a positive statement to all customers and outside parties that the District encourages the efficient use of its resources.

Disadvantages of the Principle: This principle does not necessarily imply the need to adopt inverted (or tiered) block rates. But some customers and outside parties may believe that it requires the District to adopt inverted block rate structures for all classes of service. Some may also read this as a mandate for the District to consider water-budget based rates.

Principle 7 – Establish uniform rates within a service class; do not differentiate by area, within a service class, nor by pumped versus gravity water service.

Policy Statement: Rates for the District shall be uniform for all customers within a class of service and shall not be differentiated by service area or, in the case of water, by pumped versus gravity-delivered service.

Discussion: Establishing rates that are uniform for a class of service is the approach most commonly used by utilities across the United States. Utilities generally recognize that cost differences for service do exist within a customer class of service, but also recognize the advantages of a uniform rate structure. In that case, the policymakers are usually willing to accept some level of inherent inequities to gain the advantages and benefits derived from uniform rates by class of service.

Advantages of the Principle: A principle that has a uniform (i.e., the same) rate for all customers within a class of service is likely to be perceived by customers as fair and equitable. It will be more cost efficient for the District to administer the rate since no consideration is given to the location of a customer or whether water is pumped or delivered by gravity. It can also minimize dramatic rate differentials when areas need costly infrastructure improvements. The principle may also help to eliminate the perception that there are "two or more Districts" within the District.

Disadvantages of the Principle: This principle does not recognize the cost differences associated with serving different areas of the District. It is commonly accepted that all utility systems have cost differences associated with serving different customers in different areas of the systems. Any rate-setting principle that has a single, District-wide rate for a class of service recognizes, and is willing to accept, those cost differences because the benefits outweigh the disadvantages. Customers who believe rates should be individually defined to the greatest extent possible will likely object to this principle.

Principle 8 – Calculate water, sewer, and recycled water rates independently, without subsidies where practicable.

Policy Statement: Although some shared costs such as administrative overhead must be appropriately allocated among water, sewer, and recycled water; system facilities, operating costs, and debt service will be separately identified and allocated to each utility. There should be no subsidy of one utility by another.

Discussion: This principle recognizes that each utility has different customers and, therefore, subsidizing one utility by another would create inequities.

Advantages of the Principle: This approach holds most closely to Proposition 218 requirements that rates reasonably reflect the proportional costs of service to a particular property, and minimizes dissatisfaction by customers who believe their rates are subsidizing other customers or that they are paying for benefits they are not receiving.

Disadvantages of the Principle: The disadvantage of this principle is that it does not allow for the possibility of allocating costs in a manner that may result in a win-win outcome for all customers.

Principle 9 – Establish agricultural irrigation rates that recognize agriculture's role in the District's formation and development, the quality of water required to serve these customers, and the level of service provided.

Policy Statement: Rates for agricultural irrigation must recognize the importance of historical contribution that the agricultural customer class has provided to existing and future customers. The District will consider water quality and levels of service in distinguishing agricultural rates compared to Municipal and Industrial (M&I) rates.

Discussion: From the 1850's to the 1970's, agricultural water needs played a major role in the development and acquisition of, and funding for, water rights through Project 184, Weber Dam, Sly Park Reservoir, and other diversions and facilities. The agricultural irrigation customers do not require either the level of high-quality water treatment or the level of service demanded by municipal and industrial customers. Many agricultural customers have been provided treated water as a cost savings to the District in lieu of building dual treated water and raw water pipelines when converting open ditches to pipeline as a water conservation measure. The District should not allocate costs to agricultural customers to provide high water quality and levels of service that were necessitated by its municipal and industrial customers.

Advantages of the Principle: Acknowledging that these issues impact the cost allocation methodology, customers will generally perceive these rates as fair and equitable.

Disadvantages of the Principle: Some customers may not agree with the fairness, equity, or legality of acknowledging these issues.

Principle 10 – Establish recycled water rates that encourage efficient use and recognize the resource benefits of reuse.

Policy Statement: Rates for water reuse shall be priced at a level that promotes the use of recycled water but is tiered to ensure efficient use of the resources.

Discussion: Water reuse is a valuable benefit and component of the District's water supply. Any principle on the pricing of water reuse must recognize three important issues: (1) The District's customers should not pay a base rate for recycled water that is higher than the base rate for potable water. (2) Reuse water is lower quality than potable water, and pricing it at or above potable water would not reflect the difference in quality. (3) Because of the benefits of water reuse, the District should encourage reuse water for its customers as well as the efficient use of this resource.

Advantages of the Principle: The major advantage of this Principle is that it recognizes water reuse as a valuable water resource to the District. It attempts to price the commodity recognizing differences in quality, the financial benefits water reuse provide to District water and sewer customers, and the advantages of encouraging additional but efficient use.

Disadvantages of the Principle: The major disadvantage of the principle is that it may not collect the full costs of water reuse.

Principle 11 – Allocate property tax revenues reasonably among commodities.

Policy Statement: Allocate all property tax revenues received to support District operations across the board. In this way the tax income will support all program efforts in direct proportion to the total District program needs. The specific allocation will be decided during the budget process and final adjustment made at the audit review and approval.

Discussion: The District has reasonably allocated the property tax revenue between water and wastewater commodities based on the number of accounts the District services but maintains a degree of flexibility in order to meet broad District financial objectives. In addition, the District has used these tax revenues (which the District's financial advisors and underwriters have classified as miscellaneous revenue) to ensure that each enterprise fund meets its financial goals and debt coverage tests.

Advantages of the Principle: This principle benefits our customers by helping each enterprise fund meets its debt coverage test, thereby minimizing debt service costs and rate volatility.

Disadvantages of the Principle: This principle does not mathematically allocate tax revenues to enterprise funds based on the dollars paid by and the number and type of services provided to each taxpayer.

Principle 12 – Consider financial tests, such as debt service coverage, in all District financial planning and rate adjustments.

Policy Statement: The District is legally obligated to meet certain financial tests specified in the documents resulting from the issuing revenue bonds. These obligations need to be considered and reflected in financial plans and future rate increases.

Discussion: While these requirements are intended to ensure bond holders that the District will have sufficient revenue to repay bond holders, they are also beneficial in that they force the District to maintain adequate reserves and meet annual revenue requirements, which contributes to the overall financial health of the District.

Advantages of the Principle: This principle can help ease political pressure not to increase rates except in the most dire of circumstances. Meeting the coverage ratios specified in bond documents can help the District avoid falling into disrepair because it provides a specific means for the District to adhere to its current legal obligations of maintaining the general financial health of the District.

Disadvantages of the Principle: This principle is unnecessary since the District is already legally obligated to maintain its debt service ratios.

Appendix B. Common Rate Study Terminology and Abbreviations

Ag – Agriculture or Agricultural

cf or CF – cubic feet (= 7.48 gallons). The unit EID uses to charge for water and sewer rates.

ccf or CCF – 100 cubic feet (= 748 gallons). The measurement for annual water consumption.

CIP – Capital Improvement Plan

Capital Projects – Large infrastructure projects (pipelines, tanks, pumps, etc.).

Cost of Service – The cost to provide water/sewer service to each customer class based on the demands they place on the utility.

Customer Class – How customers are grouped based on similar user characteristics (e.g., Single Family, Multifamily, Commercial/Industrial, Small Farms, and Irrigation, etc.).

Financial Plan – Compares projected revenues with project expenses and determines the Net Revenue Requirements and % Annual Rate Increases needed.

Fixed (or Capacity) Costs – Costs that generally do not change with the amount of water used or sewer effluent generated.

Fixed Charge – The bi-monthly base charged by meter size; does not vary by water use.

Meter size – Meters measure water usage at the property; the size is determined by its aperture and capacity to provide water flow. Most EID customers have 3/4" meters.

Peaking Factors – Peak monthly consumption divided by the 12-month average consumption; reflects the share of system capacity each customer class uses and determines their share of capacity-related costs.

Rate Revenue – The amount of money EID receives from water, sewer, and recycled water rates.

Rate Structure – How rates and charges are collected from various customer classes.

Tiered rate structure – Charges more per unit of water as consumption increases; reflects higher costs allocated to customers with the greatest demands on the system.

Uniform rate structure – Charges the same amount per unit of water used, regardless of how much water is used.

Variable (or Commodity) Costs – Costs that tend to change with the amount of water used or sewer effluent generated.

Water Rate/Volumetric rate – The amount charged per cf of water use.

Appendix C. Rate Study Cost-of-Service Terminology

Water Cost-of-Service Analysis Terminology

Water cost-of-service studies use a three-step approach to determine the revenue requirements to be collected from each customer class: (1) functionalization, (2) classification, and (3) allocation. These steps are briefly described below.

Terminology of a WATER Cost of Service Analysis

1. Functional Cost Components – The arrangement of the cost data by functional category (e.g. source of supply, treatment, distribution, etc.).

2. Classification – The assignment of functionalized costs to cost components (e.g. commodity, capacity, customer and fire protection related).

3. Allocation – Allocating the classified costs to each class of service based on each class's proportional contribution to that

1. Functionalization of Water Costs[1]

The first analytical step in the cost-of-service process is called functionalization, which is the arranging of expenses and asset (physical plant) data by major operating functions within the utility, for example, treatment, pumping, distribution, etc. In this study, the functionalization of the cost data was largely accomplished through the District's budget and system of accounts.

WATER Cost Classifications

Commodity Costs – Costs that vary with the total flow of water (e.g. chemical use at a treatment plant).

Capacity Costs – Costs vary with peak day or peak hour usage, since facilities are typically designed and sized to meet peak demands.

Customer Costs – Costs that vary with the number of customers, e.g., meter reading costs and postage for mailing bills.

Fire Protection Costs – Costs that are related to fire protection services (e.g. hydrants and over-sizing of distribution lines).

Direct Assignment – Costs that can be clearly identified as belonging to a specific customer class.

2. Classification of Water Costs[2]

The second analytical task performed in a water cost-of-service study is the classification of the costs. Classification determines why the expenses were incurred or what type of need is being met. The District's budget and system of accounts were reviewed and classified using the following categories:

Commodity Related Costs: Commodity costs are those which tend to vary with the total quantity of water consumed by a customer under average load conditions. For example, annual costs for chemicals used in the treatment and the energy costs for pumping are examples of commodity-related costs, since they tend to vary based upon the total flow of water.

Capacity Related Costs: Capacity costs are those which vary with peak demand, or the maximum rates of flow to customers. System capacity is required to meet the highest demands for water (e.g., summer lawn watering). Therefore, capacity-related costs are associated with the sizing of facilities, such as distribution lines, storage reservoirs, transmission mains and pumps needed to meet a customer's maximum water demand.

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[1] *See AWWA Manual M1, p. 60, and Financing and Charges for Wastewater Systems, Manual of Practice No. 27, Water Environment Federation, 2004, p. 110.*

[2] *See AWWA Manual M1, pp. 61 and 67.*

Customer Related Costs: Customer costs are those which vary with the number of customers rather than system production or consumption levels. These costs can be referred to as readiness to serve or availability costs.

Fire Protection Related Costs: Public fire protection costs are those related to the public fire protection functions. Usually, such costs include public fire hydrants and the over-sizing of mains and distribution storage reservoirs to meet fire protection needs.

Direct Assignments (DA): Certain costs associated with operating the system may be directly traced to a specific customer or class of service (e.g., agricultural and raw water costs). These costs are then directly assigned to a specific class of service. This assures that other classes of service will not be allocated costs for facilities from which they do not benefit.

3. Allocation of Water Costs

Once the classification process is complete, the various classified costs are allocated to each customer class based on the following allocation factors:

Commodity Allocation Factors: As noted earlier, commodity related costs vary with the total flow of water. Therefore, the commodity allocation factors reflect the percentage of the projected total metered consumption (volume of water sold) for each class of service.

Capacity Allocation Factors: The capacity allocation factor was developed based upon the assumed contribution to peak day use of each class, estimated using assumed peaking factors for each customer group. These peaking factors are the ratio of the peak day divided by the average-day for each customer class based upon a review of the average month to peak month usage. Given this peaking factor, the peak day consumption for each class of service was developed, and the actual allocation factor is the percentage of the total peak day consumption for each customer class.

Customer Allocation Factors: Customer costs vary with the number of customers on the system. These allocation factors were based upon the number of customers. Separate customer allocation factors were developed to reflect the costs associated with directly assigned costs, such as agriculture and raw water customers.

Fire Protection Allocation Factors: The development of the allocation factor for public fire protection expenses involved an analysis of the fire flow requirements for each class of service. These costs only affect residential and commercial customers, while agricultural, irrigation, and raw water customers do not share in fire protection costs. This factor takes into account the gallon per minute fire flow requirements, along with the duration of the required flow. The fire flow rates used within the allocation factor were based upon industry standards and similar experiences with other water cost-of-service studies, and reviewed by the District's staff. For this study, it has been assumed that minimum fire

WATER Cost Allocation Factors

Commodity Allocation Factors – Reflect the total percentage of annual water sales.

Capacity Allocation Factors – Determined using the estimated peak-day consumption for each customer class.

Customer Allocation Factors – Reflects the number of customers on the system.

Fire Protection Allocation Factors – Determined by the flow and duration requirements during a fire to provide sufficient capacity for residential and commercial customers.

Direct Assignment Allocation Factors – Percentages based on specific customer class use of specific facilities or costs.

flow requirements for residential customers is 1,500 gallons per minute (gpm), 750 gpm for multi-residential, 3,000 gpm for commercial and schools.

DA Allocation Factors: It is typically clear that these costs are directly (100%) related to specific customer classes, such as raw water, agricultural customers, etc.

Based on the cost functionalized/classified costs and the cost allocation factors, the final step in the cost-of-service analysis is to allocate the classified costs to the various customer classes.

SEWER Cost Allocation Factors

Volume Allocation Factors – Reflect the total quantity of effluent generated by each customer class.

Strength Allocation Factors – Determined by the type of customer and the typical effluent they generate. Often relies on State Revenue Program Guidelines where specific sampling data is not available.

Customer Allocation Factors – Reflects the number of customers on the system.

Direct Assignment Allocation Factors – Based on facilities dedicated to specific types of services, such as recycled water.

Wastewater (Sewer) Cost-of-Service Analysis Terminology

A sewer cost-of-service study uses the same three-step approach as a water cost-of-service study to review and allocate costs (i.e., functionalization, classification, and allocation). A more detailed discussion is provided below.

1. Functionalization of Sewer Costs

The first step of functionalization is the arrangement of expenses and asset (plant) data by major operating functions within the sewer utility, for example, collection and treatment costs. This functionalization of the cost data is often accomplished through the District's system of accounts.

2. Classification of Sewer Costs

The second step is the classification of the costs, which defines why the expenses were incurred or what type of need is being met. This step involves evaluating revenue requirements and classifying them into the following cost classifiers.

Terminology of a SEWER Cost of Service Analysis

Functionalization – The arrangement of the cost data by functional category (e.g. treatment, collection etc.).

Classification – The assignment of functionalized costs to cost components (e.g. volume, strength, and customer related).

Allocation – Allocating the classified costs to each class of service based on each class's proportional contribution to that specific cost component.

Volume Related Costs: Volume related costs are those costs which tend to vary with the total quantity of wastewater collected and treated by a customer. A majority of collection system costs and treatment costs are included in this component.

Strength Related Costs: Strength related costs are those costs associated with the additional handling and treatment of higher "strength" wastewater. Strength of wastewater is typically measured in terms of biochemical oxygen demand (BOD) and total suspended solids (TSS). Higher levels of BOD or TSS generally equate to higher treatment costs.

Customer Related Costs: Customer related costs vary with the number of customers, and typically include the costs of billing, collecting, and accounting.

Direct Assignments: Certain costs associated with operating the utility may be directly traced to a specific customer or class of service, such as recycled water. These costs are then "directly assigned" to that specific type of service.

3. Allocation of Sewer Costs

Once the classification process is complete, the various classified costs are allocated to each customer class using the following cost allocation factors.

Volume Allocation Factors: Volume-related costs are generally allocated on the basis of contribution to wastewater flows, for example the winter water usage plus the estimated infiltration and inflow (I&I) for each class of service.

Strength Allocation Factors: Strength-related costs are classified as biochemical oxygen demand (BOD) and suspended solids (SS) based upon the relative strengths of effluent each class contributes to the flow at the plant.

Customer Allocation Factors: Customer costs are allocated to the various customer classes based on the number of customers. These types of costs do not vary by the volume or strength characteristics.

DA Allocation Factors: This allocation factor was developed from the projected recycled water system costs. For example, dedicated transmission or distribution lines and pumping facilities for recycled water are allocated 100% to this direct assignment category.

Based on the allocation factors, the final step in the sewer cost-of-service analysis is to allocate the classified costs to the various customer classes.

SEWER Cost Classification Categories

Volume Costs – Costs that vary with the total wastewater (e.g. pumping costs).

Strength Costs – These costs are related to the wastewater treatment function, which typically includes biochemical oxygen demand (BOD) and total suspended solids (TSS). Facilities are often designed and sized around meeting these costs.

Customer Costs – Vary with the number of customers on the system, e.g. billing costs.

Direct Assignment – Costs that can be clearly identified as belonging to a specific customer group or group of customers.

Appendix D. Allocating Potable Water System Costs to Direct Assignment (DA) Customers

The District's Cost-of-Service Guiding Principle #9 identifies agricultural irrigation customers as qualifying as a Direct Assignment (DA) designation. The DA customer class consists of a unique set of customers with special characteristics and, because of this, need special consideration in terms of allocating cost associated with the delivery and level of water service.

The District's overall fixed assets include plant and equipment (i.e., infrastructure) such as water treatment facilities, pipes, pumps, and other transmission and distribution facilities used to provide water to District customers. The brief discussion below summarizes and documents the cost allocation process used to determine the percentage of the District's fixed assets allocated to DA customers. These percentages were used in the District's Cost-of-Service study to determine the DA revenue requirement to be collected through water rates.

METHODOLOGY FOR ALLOCATING FIXED ASSETS

The District estimated the DA percentage of fixed assets by comparing the net present value (NPV) of the portion of fixed assets that supply service to agriculture irrigation customers to the NPV of all the District's fixed assets. There are three types of fixed assets:

1. Those used entirely for DA customers.
2. Those used entirely for non-DA customers.
3. Joint-use assets that provide service to both DA and non-DA customers.

Examples of fixed assets used entirely for DA customers primarily include ditch facilities still in service providing raw water.

Facilities used entirely for non-DA customers include assets associated with water treatment plants, covered storage tanks and reservoirs for safe drinking water compliance, infrastructure in El Dorado Hills that does not serve agricultural customers, and other specific infrastructure installed as part of residential or commercial developments.

The District separated joint-use fixed assets into two categories: (1) source water conveyance, which includes all fixed assets for the Project 184 canal system, and; (2) drinking water transmission and distribution system fixed assets. Sly Park Reservoir fixed assets are included in the potable water fixed assets list. The District allocated these joint-use fixed assets to DA and Non-DA customers based on average water deliveries to the DA customer class compared to total water deliveries.

For example, if the NPV of a pipeline which delivers water to both potable and DA customers is $1,000, and DA uses 5 percent of the capacity of the asset, then DA would be assigned a $50 NPV (i.e., 5 percent times $1,000).

To estimate the allocations for joint-use assets, the District compared DA consumption to total water deliveries. Using 2018-2022 water consumption, the average water volume delivered to DA customers through the potable water system was 3,101 acre-feet (AF), while the average total potable water delivery was 34,969 AF. Therefore, approximately 9 percent of total consumptive water diversions was delivered to DA customers (i.e., 3,101 AF divided by 34,969 AF = 9 percent). For joint-use assets providing service to both DA and non-DA customers, DA customers were assigned 9 percent of the NPV of the assets.

TABLE 1	Total Water Delivery (AF)	DA consumption (AF)	Percent of Total Water Delivery
2022	34,808	2,881	8.3%
2021	37,903	3,368	8.9%
2020	36,159	3,309	9.2%
2019	31,906	2,734	8.6%
2018	34,069	3,211	9.4%
Average	**34,969**	**3,101**	**8.9% (~9%)**

To determine the percentage value to assign to the Project 184 conveyance system, the average DA consumption of 3,101 AF was assessed against the total water delivered through the Project 184 conveyance of 82,180 AF (including hydro generation), resulting in a 3.8 percent DA assignment to Project 184 fixed assets.

TABLE 2	Water Delivery (AF)
Hydro generation/Permit 21112	67,100
Pre-1914 consumptive	15,080
Total Deliveries	*82,180*
DA consumption	3,101
DA Allocation of Project 184	**3.8%**

Finally, to determine the percentage of total fixed assets assigned to DA customers for the purpose of estimating their revenue requirements, the total NPV of all DA associated fixed assets (both hydro and potable water) was compared to the total NPV of all fixed assets. Table 3 reflects the results of this analysis.

TABLE 3	Net Present Value	
DA Fixed Assets - Potable Water	$10,630,529	
DA Fixed Assets - Project 184	$5,892,289	
Total Water/Project 184 Fixed Assets	$428,802,694	3.9%

Therefore, the District used 3.9 percent of total fixed assets value in the water rate model to determine the final revenue requirement for DA customers.

Appendix E. Single-Family Tiered Rates Excluding Property Tax Revenues

As previously discussed, the 2015 San Jaun Capistrano decision clarified that water agencies must demonstrate the cost basis of rates, particularly tiered rates. Because of the District's voluntary use of property tax revenues to reduce water rates, the actual "demonstrated cost basis" of rates is the revenue requirement without the use of property taxes. Table E-1 below shows this amount, which is $19.5 million, vs. the revenue requirement including property tax revenue, which is $16.3 million. This is a $3.2 million difference, or approximately a 20-percent increase in revenue collected from tiered rates for single family customers. Table E-2 documents the tiered consumption levels used in calculating these rates.

Table E-1 – Residential Tiered Commodity Rates Excluding Property Tax Revenues

RESIDENTIAL TIERED VOLUMETRIC RATES			*BASED ON GROSS REVENUE REQTS (EXCLUDING PROPERTY TAXES)*			
Potable Water Customer Class		Upper Tier Breakpoint	Water Consumption	Commodity Rates ($/ccf)	Commodity Rates ($/cf)	Tier Rate Revenue
Single Family Residential	*Tier 1*	*1,800 cf/bi-mo.*	*2,772,453*	*$2.7888*	***$0.0279***	*$7,731,859*
	Tier 2	*4,500 cf/bi-mo.*	*1,596,793*	*$3.3521*	***$0.0335***	*$5,352,634*
	Tier 3	*-*	*1,562,349*	*$4.1368*	***$0.0414***	*$6,463,166*
Total			*5,931,596*			*$19,547,659*
Target SFR Volumetric Rate Revenue - Excluding Tax Revenue						***$19,548,302***
Target SFR Volumetric Rate Revenue - Including Tax Revenue						***$16,327,574***

1. 2022 consumption by tier. There was ~4% difference in the total consumption for the single-family residential from District totals, as the total consumption value in the model is based on actual consumption file provided by the District, whereas the tiered analysis is calculated based on how much was actually billed in each tier. These numbers were, therefore adjusted to match the SFR total.

Table E-2 – Single-Family Tiered Consumption Levels

SUMMARY OF SFR TIER CONSUMPTION		
SFR Tiers	Tier Breakpoints	Tier Consumption (CF/Yr.)
Tier 1	0 - 1,800 cf	277,245,314
Tier 2	> 1,800 cf	159,679,314
Tier 3	> 4,500 cf	156,234,948
Total		593,159,576

Source of Tiered Consumption: 2022 EID Tiered Usage Analysis_ 09222023.pdf.